Industrial FINISHING

TECHNOLOGY DEPT.

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ndreds of sanding, rubbing, polishing, fing, and deburring jobs are speeded with the EASY Sander. Wet or dry, ved or flat surface applications, on od, metal, plastic, slate, composition, etc. he "EASY'S" fast, short stroke, straight-line, k and forth reciprocating action, floating sand- pad, and universal drive prevents gouging, rls, lapping, or heating of work. Permits use of illed workers on even the most sensative ma- als and closest tolerance jobs.

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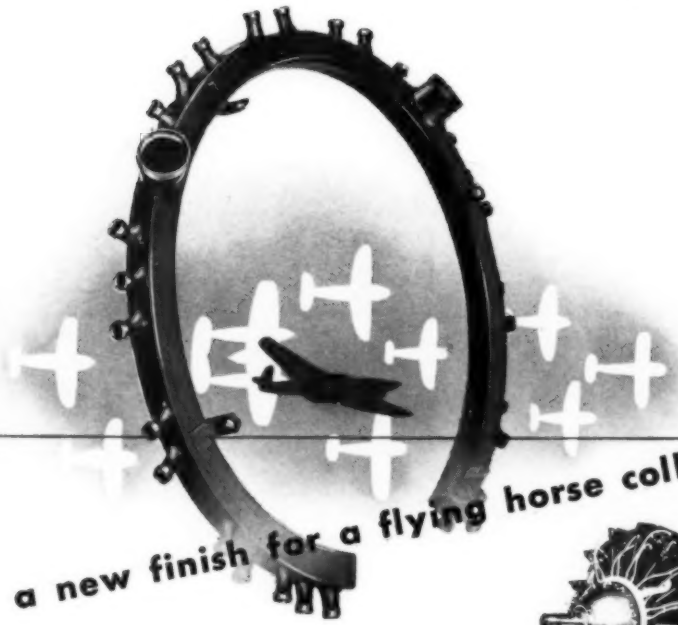
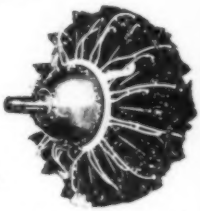


a new finish for a flying horse collar!



RECENTLY, subcontractors of the largest manufacturers of airplane engines had a tough nut to crack. Cadmium, normally used to plate their ignition harness manifolds, was a critical material. A substitute had to be found.

They had to find a metal finish that would adhere stubbornly *to steel, brass and silver solder* through all ranges of temperatures—all degrees of humidity—and withstand the abuse of installation without chipping from the metal.

Result? The answer was found to be Roxalin's plastic base Paladin—a coating specially engineered for use on hard to finish metals where conventional lacquers and enamels won't adhere.

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What is *your* tough job? Our files of special purpose finishes for all branches of industry—and the skill and experience of our technical staff—are at your disposal. Write us for complete information.

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Enamel Strippers*

NOTICE HOW ENTHONE ENAMEL STRIPPER WRINKLES AND COMPLETELY REMOVES ENAMEL FROM BASE METALS.

SURFACE IS CLEANED AND READY FOR PAINT.

THE ENTHONE CO.

NEW HAVEN, CONN.

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It's JUST AS TOUGH!
It's JUST AS BLACK!
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It's SLIGHTLY SMOOTHER!

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TWENTIETH YEAR OF PUBLICATION

Industrial FINISHING

W. H. ROHR, Editor E. A. DOSCH, Assoc. Editor

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INDUSTRIAL CHEMICAL DEVELOPMENT CORP.

Letters from Readers

Lithographing Tin Plate

From time to time we have noticed articles about roller coating and lithographing tin plate and black iron sheets, which are later formed into cans, boxes, etc. We are interested in installing such equipment and we would be grateful if you could let us know some of the best concerns furnishing this?—E. K. Co.

Information furnished.—ED.

Who Makes "Penseal"?

We would appreciate it if you could assist us in obtaining the name of the vendor of a material which we believe is called "Penseal." We have been informed that it is made by the Technical Coating Co. The material is an oil or grease and is used for the protection of aluminum alloys for storage or shipment. This is the extent of our knowedge on the subject. We have no record of a company called Technical Coating Co. and we were wondering if you could check this for us?—A. D. Co.

Our letter to Technical Coatings, Inc., New York, has been returned. Can some reader suggest a company that makes such a product?—ED.

Finishing Small Parts

In my consulting work I am now concerned with a finishing problem that requires some study. I realize that no one makes a standard article for the rapid finishing of small parts, and usually it is necessary to design something of a special nature after careful study of the situation.

I am just wondering if you might have some photographs of a typical installation on small parts finishing that might be helpful? It occurs to me that several years back you ran a

Perfection
Synthetic
FLAT
FINISHES

5
DISTINCT
ADVANTAGES

1 A beautiful rubbed effect appearance.
2 Waterproof, liquor-proof.
3 A finish free from orange peel.
4 Will not change sheen upon standing.
5 A perfectly clear finish that brings out the beauty of the wood and stain.

A full range of sheens

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A LIQUOR PROOF WATERPROOF FINISH
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Furniture Designers

Tracing Paper

Detail Paper

For permanent record of your designs—

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DIVISION OF
Drawing Materials
NEW YORK N.Y.

number of items on this type of work, and I am wondering if you might be able to advise something that would be helpful. Unfortunately, I have not kept a complete file of the magazine, hence I will appreciate any assistance you may be able to give me in this connection.—L. T. E.

We are sending you tear sheets of several articles published in past issues of I. F. These portray and describe dipping, tumbling and whirl finishing, the latter being a combination dipping-whirling process.—ED.

Dipped Tips for Heavy Cotton Cord?

We are sending you a small length of cotton cord (3/16-in. diameter). We wish to secure a material suitable for forming a tip about ¾-in. long for the purpose of preventing the plies of the cord from unravelling. To meet specifications, the material should be fireproof or at least non-fire-sustaining. Of course, fast drying time and ease of handling are factors which would enter into our decision to adopt any particular material. Do you know of any companies manufacturing a suitable dipping solution?—B. A. Co.

Who can supply a material?—ED.

Attention, Paint Makers! Give Users Information

I am a paint foreman, with 25 years spent constantly in the paint trade, yet becoming more ignorant every day. I cannot truly define the word "synthetic," much less grasp the references to melamine-alkyd-urea finishes, plasticizers, oleo-resinous finishes, glycerol pthalate, dibutyl phthalate, ethyl, butyl, amyl, phenolics, polystrol, vinylite, methacrylates, synthetic lacquer, etc.

The average packaged finish is seldom labeled with any information other than a lengthy code number, the color, or an illuminating description such as Type 1, 2, 3, etc. No reference is made to drying time, type of thinners to use, whether it is air-drying or baking, its covering capacity, or whether it is for inside or outside.

It is particularly exasperating when, in the course of constantly changing specifications, an order comes through to apply an entirely new Army-Navy coded finish, to be reduced with an equally baffling coded thinner. It may turn out to be the same finish with merely a new code specification number.

One may assume the stuff is synthetic, but the labels avoid this word like poison. Many gallons of finish have been curdled and ruined by the

Draftsmen and Engineers

Waterproof

Finest drawing ink

SCHNELL & BROCK
DIVISION OF
Drawing Materials
NEW YORK N.Y.

Protective . . .

Decorative . . .

Attractive . . .

WRINK-ALL

MADE from non-critical oils in fine, medium or coarse texture. A proven product that has received wide acceptance by manufacturers everywhere.

WRINK-ALL has all the characteristics of old type wrinkle in appearance, uniformity, application, baking schedules, etc. It is available in all shades and colors.

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METALLIZED FINISHES
SYNTHETICS AND
SPECIAL COATINGS
FOR ALL SURFACES

United Lacquer Mfg. Corp.

General Offices, Laboratory, Factory: LINDEN, N. J.

NEW ENGLAND MFG. DIVISION, BOSTON, MASS.

BACK THE ATTACK! BUY WAR BONDS!

NEW PERIOD
WOOD and METAL
FINISHES

SERVICE

We have been told that the priceless ingredient of a product is the integrity of its maker. We agree and add another priceless ingredient which is the service behind the product.

NEW PERIOD Finishes are backed by a house with a record of over a quarter of a century of good performance and satisfactory service. No job has been too small or too big to receive the best attention and the best service we have to offer.

Listed below are some of the NEW PERIOD Finishes we make. If we can be of service to you please call on us.

BAKING ENAMELS
ENAMELS—LACQUERS
SEALERS—PRIMERS
SYNTHETICS
VARNISHES—SHELLAC
FILLERS—STAINS
FINISHING SUPPLIES

Working samples sent on request.

NEW YORK WOODFINISHERS' SUPPLY CO., INC.
109 IMLAY STREET
BROOKLYN 31, N. Y.
EST. 1917

painter having to guess at the proper thinner, not to mention the paint jobs that have been ruined. The trial and error method is in use as much today as it ever was, if not more so.

No doubt the proper information and workable data, or specifications covering these products, are available somewhere. Perhaps it is sent to the Engineering Department, Technical Directors, or the General Manager. If so, it seldom trickles down to the painters, judging from the blank looks and equally dumb replies I receive from others in the trade.

The paint makers should bear in mind that painters are not chemists, although the future may make this necessary.—GEO. A. MARTIN.

Can Supply Transparent Coating for Plastic

We have a clear vehicle that can be baked on at 300° F. for 20 minutes, which might answer for the purpose mentioned on page 6 of INDUSTRIAL FINISHING for March. The vehicle we have in mind is successfully used on polished aluminum reflectors, which must stand outside exposure without any other protective coating.—HILO VARNISH CORP.

To Rollercoat Strip Steel

We believe the inquirer for the above mentioned, on page 6 of March INDUSTRIAL FINISHING, can obtain the desired machinery from the Fuchs & Lang Division of the General Printing Ink Corp. of New York.—HILO VARNISH CORP.

Painting Steel Tubes

At present, we have 40M cold-rolled steel tubes 2¼-in. I.D. x 6-ft. which we are painting with olive drab. We are interested in painting these tubes on a large scale production basis. May we please have a list of your advertisers who could furnish us with details and equipment to paint these tubes on that basis?—D. Mfg. Co.

Names of concerns given.—ED.

Will Stop "Enamel Blisters"

Referring to March 1944 issue, on page 90, "Questions and Answers," we note that the C. E. Co., who manufacture metal furniture, wrote in to you advising of their trouble in painting electro zinc-plated surfaces.

Our Bonderite 32 process is widely used on applications of this nature and we would appreciate your advising us

(Continued on page 84)

NOVO-LITE

Novo-Lite is a non-critical Lacquer Product, to take the place of Lacquers made from critical raw materials. No different from critical Lacquers in the results obtained.

NOVO-LITE Gloss
NOVO-LITE Semi-Gloss
NOVO-LITE Flat

Novo-Lite is of heavy consistency, somewhat heavier than critical Lacquers.
Can be thinned with our NOVO-LITE Reducer, or with our Synotol Thinner.

Novo-Lite lacks nothing in durability as compared to critical Lacquers, and will stand the same tests. Its working qualities and final results will stand comparison with any type of critical Lacquer.

• The alert manufacturer is never too busy to consider a better product.

STILLE-YOUNG

MANUFACTURERS: LACQUERS · FILLERS · STAINS · ENAMELS · PAINTS
2300 North Ashland Avenue Chicago 14, Illinois

THE LILLY COMPANY
HIGH POINT, N. C.

THIS MONTH when it rains here, it'll be raining somewhere else too—raining death and destruction on our enemies who started this war. They asked for it and they're getting it. They thought that free people couldn't be efficient—thought that the way to get people to do things is to bang a gun butt on the door and give orders. If refusal means a concentration camp or firing squad, men and women usually do as they are told. That's "Gestapo" efficiency—but they know now that it doesn't compare with the efficiency of an aroused free people. With the skies above them literally darkened by our bombers daily, they know now that this "decadent" U. S. (as they once referred to us) is now out-producing the world in armament and implements of war. We here at the Lilly Varnish Company are proud of our modest contribution toward this achievement. We will keep on making war finishes as long as they are needed but it is our fervent hope that April Showers 1945 will be calm and peaceful all over the world.

★

LILLY VARNISH COMPANY
INDIANAPOLIS, IND.

MAC-LAC DOES IT AGAIN—WITH

STILL OUT IN FRONT

THIS TIME IT'S—

PURE IVORY WHITE* SHELLAC

When does an Orange Shellac become a Bleached Shellac? Answer—when MAC-LAC chemists work it out. Actually our new Shellac is Ivory and not a pure bleach but it has opened up a whole new field covering all jobs formerly requiring Bleached Shellac. It was produced by *chemically treating* Golden Orange Shellac recently released by WPB for certain civilian uses. Complies with U. S. Government Regulations. Write for FREE SAMPLE and Descriptive Folder.

*Patent applied for

GOLDEN or DELUXE SHELLAC

now available for Furniture on application (WPB-1361). In Flake or Cut in S. D. or #1 Proprietory as preferred.

THE MAC-LAC COMPANY, INC. • 127 Maiden Lane, New Yor N. Y.

WITH THE "BIG 4" FURNITURE FINISHES

WE HAVE BEEN SWAMPED WITH PRAISE—AND ORDERS FOR • •

SMOOTHLAC and SPECIAL-LAC

AMERICA'S FINEST SHELLAC ALTERNATES

You can talk about a product until you're blue in the face but there's only one thing that counts—PERFORMANCE. First orders are important but the real pay-off is *RE-ORDERS*. Introduced only a year and a half ago, these two revolutionary MAC-LAC creations have produced results even beyond our own rosy expectations.

Are SMOOTHLAC and SPECIAL-LAC as good as SHELLAC? We make no such claim. In some cases they don't measure up to 100% – for certain uses they are actually better. But we firmly believe they are the best Shellac alternates yet produced by technical brains and skill. Read the facts at the right – and send in your orders with complete CONFIDENCE.

Write for descriptive folder giving complete information.

FACTS ABOUT SMOOTHLAC and SPECIAL-LAC

Tough — hard and resilient • Water-resistant • Produce beautiful finish • Can be sanded without gumming • Setting time equal to Shellac — no offensive odor • Easy to apply with brush, cloth or spray • No deterioration in cans (tern-plated) • Splendid adhesion • Coverage equal to shellac

N. Y. • Factory, Rahway, N. J.

GIGANTIC

makes possible Improved Quality Control in Pittsburgh Industrial Finishes

THIS 70-foot tower is an important landmark in the history of Industrial Finishes. Built by Pittsburgh in 1943, it is the only oil selector of its kind in the world.

INSIDE THIS TOWER, A REMARKABLE TRANSFORMATION TAKES PLACE IN NATURAL OIL.

It is literally taken apart—molecule by molecule—by a special solvent which cascades down the tower while the oil rises in a continuous flow. This process is known as "molecular selection."

Molecules ideally suited for making superior Industrial Finishes are segregated into a brand new selected oil which possesses important advantages:

THE DRYING IS VASTLY IMPROVED.

Since this selected oil does not vary in quality like nature's product, uniformity of paint performance is assured.

Thanks to this improved oil, the thousands of gallons of Pittsburgh Industrial Finishes now being supplied for all types of war equipment frequently exceed minimum specification requirements by a considerable margin.

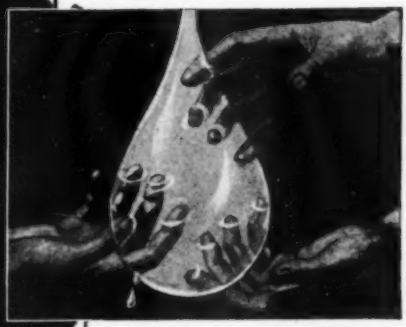
Expert advisory serviced is offered users of Industrial Finishes by our technical staff. Our long experience in this field can often save time and money.

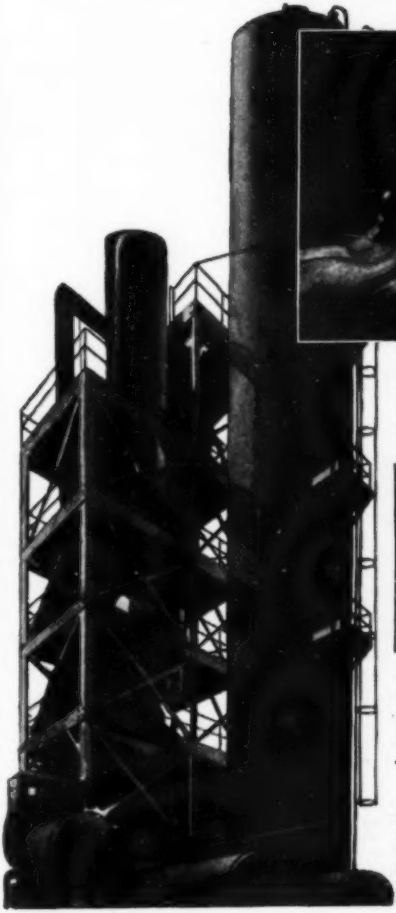
PITTSBURGH PLATE GLASS COMPANY, Industrial Paint Division, Pittsburgh, Pa. Factories: Milwaukee, Wis.; Newark, N. J.; Houston, Texas; Los Angeles, Calif.; Portland, Ore. Ditzler Color Division, Detroit, Mich. The Thresher Varnish Co., Dayton, O.

PITTSBURGH *Industrial* **FINISHES**

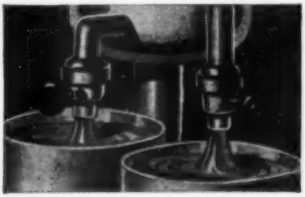
PITTSBURGH STANDS FOR QUALITY PAINT AND GLASS

"OIL SELECTOR"





● Inside this oil selector, ordinary oil is taken apart as if by magic fingers. Molecules most useful for paint-making are segregated from other molecules that add little to a paint film. Result—two brand new oils.



● As if possessed of magic fingers, a special solvent selects the molecules most useful for paint-making and segregates the others so that two streams of brand new oil flow from the tower.

Where Magic Fingers Work

● The only structure of its kind in the world, this 70-foot tower is now converting ordinary oil into a superior drying oil for many Pittsburgh paints and finishes, plus a second oil of value to industries in which its non-drying qualities are an asset.

LACQUERS
SEALERS
SHELLAC
STAINS • GLAZES
ENAMELS
UNDERCOATS
•
NOVELTY FINISHES

IN STEP WITH THE TIMES

Industrial Finishes
that make the most of available raw materials to give you greatest durability, together with attractive appearance and economy.

• **FOR APPLICATION BY ALL METHODS**

JAMES B. DAY & CO., CHICAGO

Paasche
AIRPAINTING EQUIPMENT
Airpainting parts for the famous Curtiss Caravan in a plant somewhere in Kentucky. Paasche Equipment speeds the job!

WINGS for FINISHING

When Paasche Airpainting Equipment works for you, Finishing flows along at top speed. Paasche High Production Airbrushes provide fastest application of painting and finishing materials. Exclusive design of Paasche Material Tanks saves time in paint handling.

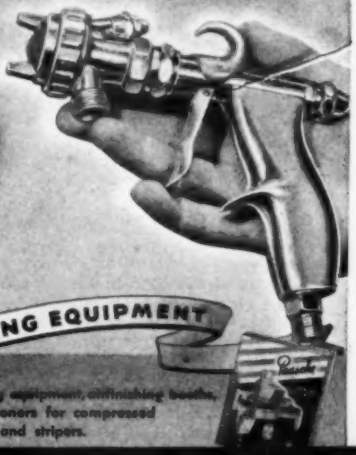
But time-saving is only one of the many advantages gained. The Paasche Water Wash Booths (interior shown above) reduce fire hazards, provide healthier, cleaner surroundings for workers, conserve paint and save cleaning time and cost.

Send for your copy of the new Paasche catalog and at the same time get the assistance of our experienced engineering staff. We will be glad to assist you on your difficult or unusual Finishing problems and help you attain maximum production.

Write PAASCHE AIRBRUSH COMPANY,
1917 Diversey Parkway
Chicago 14, Illinois
Paasche Airbrush (Canada) Ltd.
110 Elm Street, Toronto

PUT THIS GUN IN THE HANDS OF YOUR FINISHING MEN

The Paasche CUB High-Production Airbrush provides extra rapid application of all painting and finishing materials; perfect atomization and spray pattern; it's easier to handle too, weighs only 22 ounces.



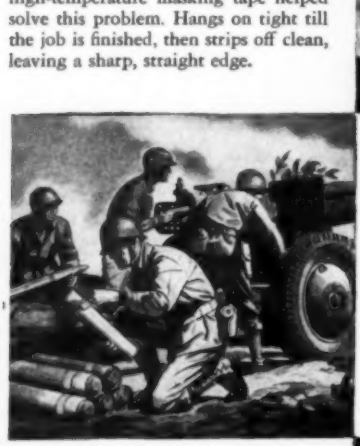
Paasche AIRPAINTING EQUIPMENT

Manual, automatic and special airpainting equipment, airfinishing booths, pressure regulators, airconditioners for compressed air lines, air dusters and stripers.

Do you know...? Quiz on wartime

Q. Protective enamel on aircraft engine parts is dried at temperatures up to:
☐ 100° ☐ 300° ☐ 500°

A. 300°. To speed production, the temperatures in paint-drying ovens had to be raised—a masking tape was needed to stand up under high heat. Permacel's high-temperature masking tape helped solve this problem. Hangs on tight till the job is finished, then strips off clean, leaving a sharp, straight edge.



Q. He knows what kind of shell is in this canister by:
☐ Color of canister ☐ Seal
☐ Shape of canister

A. Colored, imprinted Permacel cloth tape (Jonflex) serves to identify shell in canister and holds the canister together. Today used on parachute bombs, gas masks, oxygen tents and many other military items, this tough, quick-sticking, clean-stripping tape will likewise protect and identify many peacetime products.

Q. One of the purposes of these wing slots is to:
☐ Provide lift ☐ Eject empty shells
☐ Ventilate the wing

A. Empty machine gun shells are ejected through these wing slots. To protect the gun mechanism against moisture and dirt, ground crews keep wing slots covered with a special cellophane tape.

short-cuts useful for peacetime production—No. 1

Q. How are prisms for gunsights and periscopes made?

☐ Ground ☐ Cast ☐ Mined

A. Ground. In grinding prisms, protecting the polished surfaces is an exacting job. Recently, in one instance, rejects were cut from 60% to less than 15% by use of Permacel moisture-proof cloth tape on surfaces exposed to chemical bath. Thousands of yards of this Permacel tape (Utilitape) are also used daily to protect vital parts of planes and tanks during overseas shipment.

Q. Postwar airliners will be kept on course by:

☐ Horoscope ☐ Gyroscope ☐ Anemoscope

A. Gyroscope. This device, used today on planes, tanks and many other war machines, may tomorrow be guiding your private plane. A special Permacel glass tape (Glasflex) protects gyroscope motors against electrolytic corrosion, thereby prolonging motor life and increasing safety.

Q. Which of these types of pressure-sensitive tape can help speed and improve *your* production?

☐ Paper ☒ Cloth ☐ Cellophane ☐ Metal ☐ Glass

A. All of these types of Permacel tapes are today used in war production. Many war uses will prove helpful in your business when you return to post-war work. Meantime, our research laboratory facilities are available to you for development of special tapes to fit war or post-war needs.

Permacel

Industrial Tapes

INDUSTRIAL TAPE CORPORATION

New Brunswick, N. J.

Makers of Texcel Tape

Sans-Arb AND Sans-Marb
LACQUER VENEER FINISHES
BY
Meyercord

SEND FOR
FULL COLOR
BROCHURE
OF WOOD
& MARBLE
LACQUER
VENEER

End Table: Sans-Arb walnut stump and Rajah lizard trim

Lamp Base: Sans-Marb black and gold marble pattern

The MEYERCORD CO... CHICAGO 44, ILLINOIS

Which of these War Products are you making?

CHECK, as you read through this list, the products which you manufacture. If your products are not listed, write them in at the end of the list. Then tear out the page and send it to A&W clipped to your letterhead. We will send you complete information about A&W finishes for each product you have checked. In addition to serving as a check list, this partial list of war products for which Ault & Wiborg has supplied approved finishes will give you some idea of the diversity of our wartime research and manufacturing experience.

- ☐ Aircraft Accessories
- ☐ Aircraft Propellers
- ☐ Air Filters
- ☐ Air Frames
- ☐ Ammunition Chests
- ☐ Anemostats
- ☐ Arches—Elephant type
- ☐ Artillery Fuses and Boosters
- ☐ Batteries—Unit Cells
- ☐ Bazookas
- ☐ Bleaching Powder Can Finishes
- ☐ Bobbins
- ☐ Bombers
- ☐ Bomb Fuses
- ☐ Bookcase Sections
- ☐ Brewing Equipment
- ☐ Bulkheads
- ☐ Cable
- ☐ Camouflage for Temporary Advance Facilities
- ☐ Canister—Outer Body Assembly (Gas Masks)
- ☐ Can Linings for Food Containers
- ☐ Cargo Truck Parts
- ☐ Clock—Aircraft
- ☐ Cluster Assemblies T2
- ☐ Coolers for Drinking Water
- ☐ Cranes and Hoisting Equipment
- ☐ Cylinders—Shatterproof
- ☐ Dental Instrument Cabinets
- ☐ Drums
- ☐ Duplicating Machines
- ☐ Dynamotor Generators
- ☐ Electrical Supplies
- ☐ Engine Parts
- ☐ Engine Unit Mountings
- ☐ Ether Tins
- ☐ Expeditionary Gasoline and Water Cans
- ☐ Farm Machinery
- ☐ Fibre Containers—37 mm
- ☐ Fire Extinguishers
- ☐ Fuses, Percussion—20 mm
- ☐ Gasoline Containers
- ☐ Guns—Lubricating
- ☐ Gun Mounts
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- ☐ Heaters, Automatic
- ☐ Incendiary Bombs
- ☐ Instrument Panels
- ☐ Instruments—Flight
- ☐ Kitchen Cabinets, Lockers, etc.
- ☐ Machine Tools
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- ☐ Ovens, Portable Bakery
- ☐ Oxygen Cylinders
- ☐ Photographic Equipment
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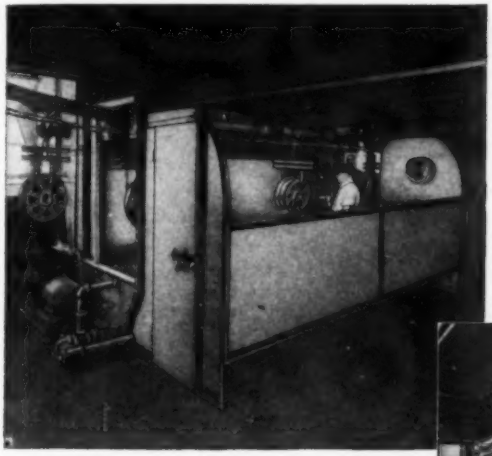
- ☐ Radio Equipment
- ☐ Reels for Signal Corps
- ☐ Refrigerators U.S. No. 8
- ☐ Riveters, Pneumatic
- ☐ Road Signs
- ☐ Safes for Field
- ☐ Shell Containers (Metal Ends)
- ☐ Shell Fin Assemblies
- ☐ Shells
- ☐ Spark Plugs
- ☐ Standard Assemblies
- ☐ Starter Assemblies
- ☐ Steel Folding Chairs
- ☐ Steel Merchant Ships
- ☐ Steel Partitions
- ☐ Stirrup Pumps
- ☐ Storehouse Accessories
- ☐ Tables—Mess
- ☐ Teletype Machines
- ☐ Tool Boxes
- ☐ Tool Kit Assemblies
- ☐ Tube Sections for Mast Base
- ☐ Transport Vehicles—Motorized
- ☐ Washing Machines
- ☐ Wheel and Brake Assemblies
- ☐ Zippers for Clothing Bags
- ☐ _____

If you are having difficulties in finishing a wartime product, or would like to make plans now for future peacetime finishes, let Ault & Wiborg work with you. An A&W technical service man is nearby; and we will ask him to get in touch with you immediately if you will write to Ault & Wiborg Division of Interchemical Corporation, Empire State Building, New York 1, N.Y. See our catalog in Sweet's File for Product Designers.

Makers of POLYMERIN® — the original speed-bake finish
®Reg. U.S. Pat. Off.

Ault & Wiborg

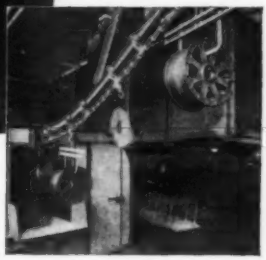
DIVISION OF INTERCHEMICAL CORPORATION



★ *(top) Aircraft wheels being painted in a Peters-Dalton Spray Booth. Air is pulled toward flood sheet carrying away all spray. Constant fresh air in booth.*

★ *(center) Part of same complete system for finish processing bomber wheels. Booth in foreground; oven overhead to provide more useable floor space.*

★ *(lower) Cutaway of individual Hydro-Whirl Spray Booth showing construction and principle (trough type unit).*



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POINTS THE WAY TO

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INDIVIDUAL SPRAY BOOTHS • OVENS • WASHERS • COMPLETE FINISH PROCESSING SYSTEMS • VENTILATING SYSTEMS

WHETHER it be the installation of a single unit or one involving comprehensive engineering skill for a complete finish processing or ventilating system, Peters-Dalton engineers are thoroughly equipped through years of experience to build and install the equipment that will make for unequalled plant efficiency.

EXPERIENCED maintenance men acknowledge the superiority of the Hydro-Whirl principle; know the efficient, trouble-free, economical operation of Hydro-Whirl installations in hundreds of plants throughout the country. Feel free to write us on any particular problem you have relating to paint spraying, finish processing or ventilation . . . no obligation.

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NOW!*

SYNCHROME ALUMINUM PAINT

You've waited patiently for CRES-LITE Ready Mixed SYNCHROME ALUMINUM PAINT. *Now* it is again available for an extensive list of uses, on orders carrying AA-5 or higher preference rating.

Write at once for complete details of WPB permitted uses.

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The True Story of Finishing Trouble that Didn't Happen

A certain contractor had a huge order for supplying Trench Shovels but he was worried! He knew that the same job had caused double trouble for another maker.

The problem resolved itself into finding the one coating which would properly adhere to 3 different surfaces—wood, aluminum casting and black iron.

But the catch was to secure a finish which would dry in 21 minutes so that the aluminum die-cast lock could be turned by hand for immediate final government inspection.

*Knowing that it had taken a couple of months to lick this problem in another plant, the maker in question called a Lowe Brothers finishing specialist. In other words, he needed *Problem-Preventing Counsel. He got it — overnight!*

LOWE BROTHERS recommended a finishing system and supplied the coating necessary to finish all 3 surfaces with the required adhesion, enabling assembly, dipping, inspection and packing to be completed within the 21-minute time limit.

Why not let LOWE BROTHERS finishing specialists give you Problem-Preventing Counsel on your present war or peacetime finishing problems?

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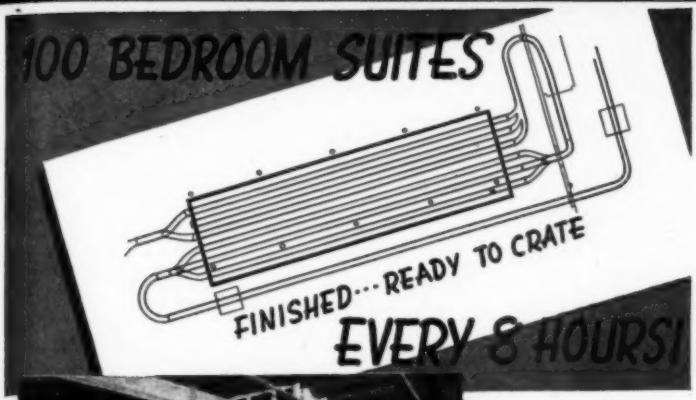
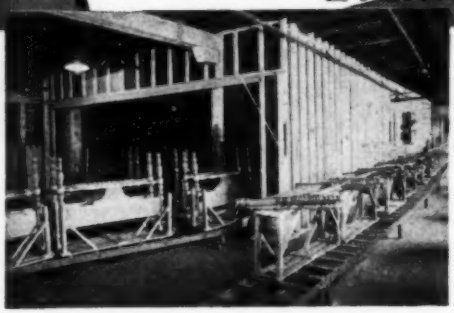
THE LOWE BROTHERS CO.
DAYTON, OHIO

**Problem-Preventing Counsel*

Lowe Brothers
WARTIME FINISHES for Industry
IN ACCORDANCE WITH U. S. GOVERNMENT SPECIFICATION





An actual view of foot boards entering the dryer on roller conveyor.

OUTPUT UPPED ALMOST 100% BY KOCH FORCED DRYING EQUIPMENT

One of the South's leading furniture manufacturers almost doubled production with this KOCH Humidified-Air Dryer installation.

Sections of the suites move from the mill room . . . through 15 finishing and drying operations . . . and are ready to crate in less than 8 hours!

This huge drying system saves time . . saves labor . . and releases space formerly required for overnight drying for other vital uses.

This is just one more instance where KOCH'S knowledge of the Forced Drying of wood finishes helped a manufacturer to boost production the quickest, most economical way.

Let KOCH'S engineers make a study of your wood finishing problems. Forced Drying may be the answer. PHONE, WIRE, or WRITE for information TODAY!

GEORGE KOCH SONS, INC.

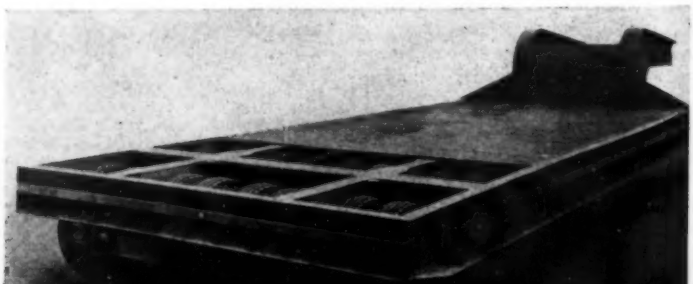
MAKERS OF

Industrial Equipment

2118 PENNSYLVANIA ST. EVANSVILLE, INDIANA

Protectively Coating Fruehauf Trailers

Surface cleaning, spray painting and paint drying operations take place in their proper order on a conveyorized line of production at the Fruehauf plant where huge, low-bed, large-capacity trailers are manufactured for the armed forces. Assembled trailer frames are mounted on dollies and pulled by a floor-level chain conveyor, while parts are hung from an overhead chain conveyor, as shown in the accompanying cuts from recent photographs.



Spray-painting the underside of a carrier frame as it moves through tunnel.

THE FORT WAYNE, Indiana, Division of Fruehauf Trailers is doing a remarkable job of turning out mobile carrier equipment for the armed forces. It is common knowledge that the successful conduct of modern warfare depends largely upon the efficient and rapid movement of various supplies and heavy equipment. You can get some idea of the tremendous loads that can be moved to destinations by looking at the picture of the huge trailer illustrated in this article. Some special jobs are even larger, with more wheels, but for reasons of military secrecy, any information on these is now restricted by the War Dept.

BY FRED BOYNTON
Technical Representative
Patterson-Sargent Co.

Protective Coatings Essential

As is the case with practically all other equipment manufactured for the armed forces, the surfaces of these mobile carriers are protectively coated with Government specification paints. They are painted to give durable protection against rust—to prevent their rapid deterioration from exposure to the elements and to the rough heavy service to which they will be subjected. The type and color of paint used for the final coat is what the purchaser specifies. In addition to its protective value it also serves for identification and to give minimum visibility at a distance. For the army it is usually olive drab; for other branches of the armed forces it may be a slightly different color.

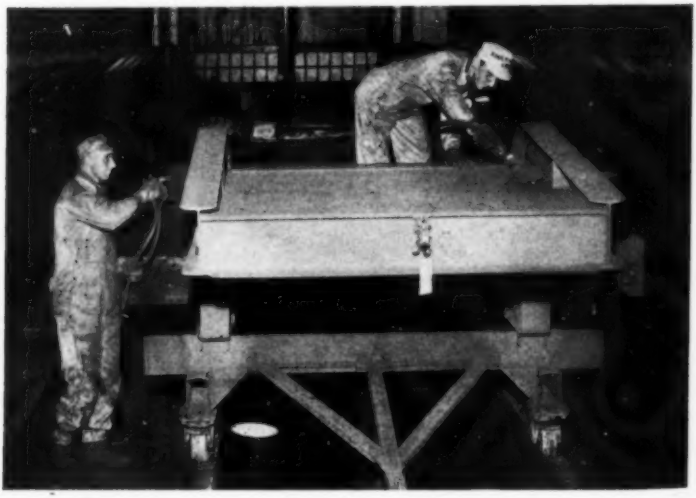
Intimately tied in with the assembly of these carriers are the

painting operations, surface preparation before painting, paint drying, and the moving of work from one station to another. Modern equipment for this work is laid out according to the progressive sequence of operations performed. This equipment includes conveyors, blast-cleaning and chemical cleaning facilities, special spray booths, and a long oven for speeding up the drying of paint. The factory space is well lighted, adequately ventilated and of ample size for this large heavy type of work. Facilities are also provided for the safety and comfort of workers.

Thorough Metal Cleaning

Before entering the assembling and painting department, all parts and sub-assemblies for trailer frames are thoroughly blast cleaned. These massive steel frames are assembled on dollies which move along a production line that parallels the conveyorized spray painting and oven drying line. Large overhead electric cranes move the heavy trailer frames to the preliminary assembly stations.

When a trailer frame has been assembled it is carefully examined for any sharp rough edges or burs. These places are smoothed down by using a portable air chisel or a portable grinding wheel. Then the assembled frame is wiped with a liquid cleaner to remove any grease, oil or dirt that may have become attached to the surface during assembly. The trailer frame is now ready for its first coat—a red oxide primer. It is moved into the long tunnel-shaped water-wash spray booth where a floor-level chain-conveyor engages the tongue of the dolly that supports the work. This detail is shown clearly in one of the illustrations that accompanies this article. Notice, in this same illustration, how two spray



Painting upper part of carrier frame in tunnel-type water-wash spray booth.

Deoxidine

is adapted to the cleaning of aluminum, aluminum alloys, steel, in fact, all metals (except zinc and cadmium) in preparation for paint, lacquer or varnish finish.

Deoxidine in peacetime made possible a lasting paint finish on steel automobile bodies. Refrigerator manufacturers and other metal fabricators were quick to recognize its advantages.

Today Deoxidine is active in War Production, insuring, through proper cleaning, a lasting protective paint or lacquer finish to much ordnance, aviation, army and navy equipment.

Tomorrow, when world peace is again restored, Deoxidine will solve many metal cleaning problems in new fields where its efficiency is being demonstrated.

Deoxidine Cleaning Process has been standard for more than a quarter of a century.

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AMBLER ACP **PENNA.**

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The parts and accessories are sprayed while hanging from hooks attached to an overhead conveyor.

operators are at work painting the top, sides and ends of a trailer frame while it moves slowly through the booth. The lighted pit below provides plenty of room for two other spray operators who stand upright and spray the underside of the frame, as shown in another picture.

Red Oxide Primer Plus Lusterless Paint

At the entering end of the spray booth a red oxide primer is sprayed on. This material is an excellent rust-inhibitive coating which adheres closely and permanently to the cleaned steel. It provides an ideal undercoat for the first coat of flat olive drab or other specified lusterless paint.

Considerable experience and skill are required to spray a uniformly thin full-coverage primer coat on the steel trailer frames because several inside and outside right-angle corners are included with the broad flat surfaces. The red oxide primer coat dries quickly. In fact the timing of its drying, the speed of the conveyor, and the length of the spray booth are so coordinated that the first coat of lusterless paint can also be sprayed in the same booth, near the exit end.

Leaving the spray booth, the trailer frames, mounted on dollies and pulled by a conveyor chain, enter a long oven wherein the two coats of paint are dried quickly and thoroughly. Following this drying, these frames are returned and again put through the same spray booth and oven for their final coat of lusterless olive drab or other specified paint. Then they proceed to the final assembly line where other parts, spray painted in another booth, are added to complete the job.

Cleaning and Painting Parts Before Assembly

Parts for the trailers include wheels, air-brake cylinders, brake drums and heavy chains. These parts are hung to hooks attached to an overhead conveyor and passed through a chemical cleaning, rinsing and drying sequence of operations before they enter the spray booth, which is located alongside the booth in which carrier beds are painted. The various parts receive the same red oxide primer coat, followed by two coats of lusterless paint to match the paint job on trailer frames. However, instead of passing through an oven, they are taken for a longer ride so the paint has plenty of time to air dry. These parts, when

TONS OF PAINT

are being stripped by our PAINT REMOVERS

We can give you authoritative advice on your removing problems

We have been making paint removers for the past thirty years . . . In that time, we have solved many tough removing problems, involving paint, varnish, lacquer, enamel, shellac and synthetic finishes. Our products are used by many furniture makers and other industrial concerns because of their speed and efficiency.

We believe you will save valuable time and labor costs in refinishing by consulting us. Right now, for example, you will find our advice helpful in removing

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Tell us the type of finish you wish to remove and we will glady advise the proper procedure and type of remover to use.

Our removers are sold by leading distributors of paint products throughout the country.

LINGERWETT

A general remover applicable to paint, varnish, enamel, lacquer, shellac, etc. It's the largest selling remover in the country.

WONDER-PASTE

Similar to Lingerwett, but in paste form. Ideal for upright surfaces, because it will not run.

SAF-TE

A new all-purpose remover that is **non-burning.** Leaves no waxy residue; no difficult wash-up job.

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completely painted and dried, meet the trailer frames at the final assembly line.

After final assembly the completed trailer is given a touch-up spraying to cover any places that may have been scratched, bruised or rubbed thin during assembly operations. Extra parts are dipped in a hot wax solution and allowed to dry. Upon drying, the parts are packed in three different kinds of paper. Each package is then immersed in another wax solution, after which it is ready for shipment overseas or to whatever field of operations it may be needed. This careful waxed packaging is an additional precaution to preserve the parts from rust or corrosion during overseas shipment and while in storage at point of destination.

All paints that are to be used in production are stored in a paint room which is reasonably close to the spray booths. Paint is sprayed from 60-gallon pressure containers located outside the booth. Enough paint is stored in the heated paint room to insure an ample supply at all times. The paint, being kept at room temperature, is always the right viscosity, so there are no thinning problems.

All departments of the big Fruehauf Trailer plant are thoroughly cooperative in maintaining a high standard of quality workmanship on these vitally essential products. The manufacture of these mobile carriers is a definite and essential contribution toward winning the war.

Mitchell-Bradford Gets Patent

A. J. Mitchell of the Mitchell-Bradford Chemical Co., Bridgeport, Conn., manufacturers of protective coatings, has been granted a patent No. 491534 for the processing in "Black Magic" and "Witch Dip," of steel precision gages for visual control, protection against corrosion from sweaty and acid filled hands, visual inspection of flaws and cracks, and protection against tampering.

The gage is blackened in the "Black Magic" bath to a depth of penetration approximately .0001-in. and given a final coating of "Witch Dip" wax. The gage is then placed into service and used until the bright steel shows through the blackened surface. It is laid aside for checking, after which it may be reblacked and again placed in use and the process continued until the entire tolerance is used up. Most gages have a tolerance beyond .0001-in., and the process results in the saving of much time and money on gage checking.

The Black Magic processes does not change the dimensions of the gage, hence its usefulness for gage protection. The process is already in use by a substantial number of plants using steel gages, micrometers, etc.

Ray Martin Joins American Resinous Chemicals Corp.

American Resinous Chemicals Corp., Peabody, Mass., announces the association of Mr. Ray C. Martin with the company, as Director of the Coatings Division.

Mr. Martin was previously associated with War Production Board in Washington, D. C., where he served with the Chemicals Bureau, Plastics Division. His direct responsibilities there were as consultant on cellulose plastics and in an administrative capacity on vinyl resins.

Previous to his War Production Board connection, Mr. Martin was a consultant to the Paint, Varnish & Lacquer Industry, and has been directly associated with this field for the past 20 years. He is the author of several publications, among them "Lacquer and Synthetic Enamel Finishes."

In his new capacity, Mr. Martin will coordinate all development work on specialty protective coatings, resin solvent systems and hot-melt adhesives.

New Production Manager for M.&W. Co.'s Newark Plant

Anthony J. Rolleri has been appointed production manager of the Newark plant of Maas & Waldstein Co., producer of industrial finishes. Mr. Rolleri joined the company as a laboratory assistant 34 years ago and has served in almost every department, most recently as foreman of the pigmented lacquer department.

3 ADVANTAGES YOU GET . . .

. . . when preparing ferrous parts for painting with NEW Oakite material!

In ONE, simple operation a remarkable newly developed acid-type material (1) removes light spinning compound, drawing lubricants, machining oils, grease, finger marks and shop dirt from steel and iron surfaces; and at the SAME time imparts a microscopic protective coating which (2) inhibits rust while parts are being held for painting and (3) assures a firm tenacious bonding of paint and similar organic finishes. This scientifically engineered material is

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Designed primarily for use in automatic washing machines, it is completely safe to parts being fabricated as well as to equipment. Used in low concentrations, it provides FAST yet ECONOMICAL surface preparation . . . has many applications on both peace and wartime work.

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CLEANING FOR EVERY CLEANING REQUIREMENT

Electronic Heat Dries Paint Coatings

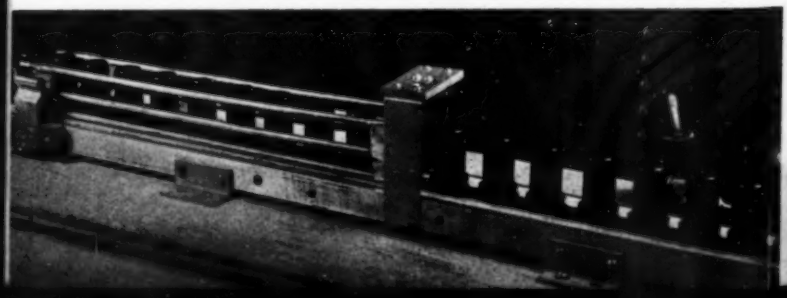
Whether or not you ever use it, you should know something about induction heating with high-frequency electricity—which heats metal surfaces so quickly, to dry paint coatings.

HEAT can be produced electrically (to dry paint coatings on metal, for example) in several different ways. Readers of INDUSTRIAL FINISHING are familiar with infra-red heat from banks and tunnels of what we generally call infra-red electric lights. Then there are electric ovens heated by units similar to what are used on your wife's electric range.

Another method of applying heat to metal electrically is by what is called induction heating, which makes use of high-frequency currents. The electric current used in most homes and for most power installations makes 60 complete cycles (120 changes in direction) per second. For induction heating, however, the currents alternate 10,000 to 500,000 times per second. When a coil carrying electric currents of such frequencies is brought near a metal object, other currents are generated in the object. These induced currents heat the object more or less rapidly, depending upon the amount of power applied and upon the electrical conducting properties of the material of which the object is made.

High-frequency electric currents tend to travel on the surface, or skin of a conductor. For instance a 400,000-cycle current in iron or steel flows in a surface layer only about .001-in. thick. Thus if high-frequency power is applied at a high rate, it is possible to heat only the surface of the work. If the high-frequency power is applied for several seconds or longer, heat is conducted from the surface

Baking the paint on metal radio tubes by induction heating. Tubes are passed through a long coil carrying electronic power; heat is induced in the metal shells, and baking the paint can be accomplished in as short a time as 15 seconds. A 2-kw. radio frequency generator will supply enough radio frequency power to bake the paint at a rate of 2400 tubes per hour. Photograph supplied through courtesy of Radio Corporation of America.



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Your equipment must last through the war . . . into the conversion period . . . and far beyond. Breakdowns and "wear-outs" must be sidetracked with efficient maintenance—proper lubrication.

That's the purpose of this SAVE and SERVE plan . . . to place in your hands the "know-how" of proper lubrication . . . to help you establish the practice of proper lubrication throughout your plant.

This plan is practical and easy to use. It has been prepared by Sun Lubrication Engineers to give you the benefit of their broad experience. The SAVE and SERVE Plan includes plant poster, wall chart, lubrication manual, technical bulletins, performance folders and maintenance memos. It will aid every man in your plant who is concerned with the operation of machinery to make it run better and last longer.

Put Sun's SAVE and SERVE Plan to work in your plant! It's yours for the asking, to help you save vital equipment . . . productive time . . . and labor. Write today for the folder which gives you the complete details . . . tells you how to get all of the material.

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into the interior of the work. This heat is capable of heating the metal sufficiently for hardening, brazing, forging, melting—and, under certain conditions, paint drying.

In a paper presented about a year ago, at the Machine Tool Forum, held at Westinghouse Electric & Mfg. Co., East Pittsburgh, Penna., Mr. Frank W. Curtis, Chief Engineer of Van Norton Machine Tool Co., explained induction heating briefly as follows:

Induction Heating . . .
High Frequency Current

"Induction heating units, briefly speaking, comprise a series of electrical units that convert the current of the input-line-voltage to a high frequency current, which in turn is coupled to an inductor or heating coil. The part to be heated is placed within the coil, but does not become a part of the closed electrical circuit. When power is applied to the circuit, however, heating of the workpiece begins immediately through induced currents of high-frequency generated from the induction coil. As illustrated in Fig. 1 (not shown here) water passes through the induction coil, when in use, to keep it cool and the only heat generated is into the workpiece itself. The coil is wound to fit the contour of the work, generally with clearance of about 3/32 to 1/8-in. in between.

"Induction heating units for industrial applications can be either of the low or high-frequency type. Those operating at lower frequencies operate to about 9600 cycles, as compared with frequencies of about 300,000 cycles, or more, with spark-gap and oscillator-type units. In the use of a higher frequency convertor you have the advantage of obtaining a skin or shallow surface heating effect, which is so often desirable in hardening operations.

"With the use of high-frequency current, heat can be inducted to a predetermined area of a metal part requiring localized hardening, thus eliminating the expense of heating the entire part. Likewise, the heat can be controlled to the depth desired, even to the point of heating certain small types of parts throughout, in which case the core or center-section has a tendency to heat by conduction from the outer surface which, in turn, is heated by induction."

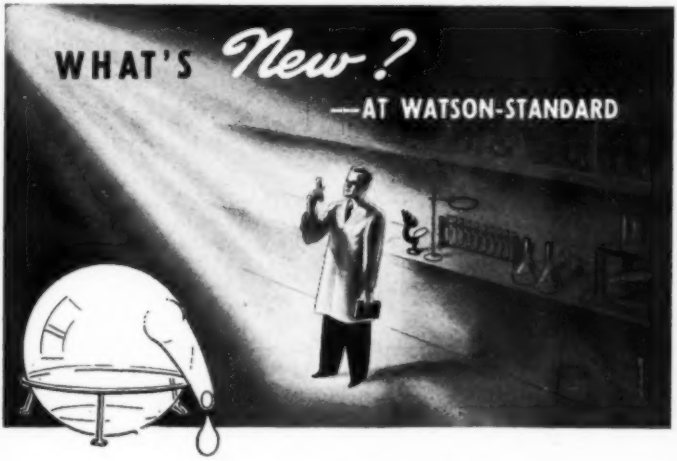
For Baking Paint
and Enamel Coatings

Is induction heating ever used or could it be used effectively to bake paint or enamel coatings on metal surfaces?

Mr. G. E. Stoltz, Manager of Metal Working Engineering at Westinghouse Electric & Mfg. Co., answered the above question briefly, under date of April 21, 1943. He wrote:

"Some of the automobile companies of Detroit dry enamel and paint on their automobile bodies by induction heating. A coil of wire is wound large enough to pass the automobile body through it. AC power is applied to this winding and it sets up a field in the metallic body of the car which generates current. These secondary currents generate heat in the steel body of the car so enamel is dried from the inside out. This seems to have some advantage over applying heat from the outside."

At the January 1944 meeting of the Philadelphia Section of the Institute of Radio Engineers, Dr. W. M. Roberds, RCA Development Engineer, presented an illustrated paper on induction heating, but this particular paper did not include anything about the rapid drying of paint coatings by induc-



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Developed to meet the need of food packers for a coating made of non-critical materials, "C" Enamel, like so many war-born "substitutes," is proving far better in many ways than pre-war products: "C" Enamel is practically 100% taste-free and has the additional advantage of superior adhesion to electrolytic tin plate. Watson-Standard Laboratories are constantly on the alert for new and better finishes. You are invited to submit your finishing problems to the laboratory staff.

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BOSTON, BUFFALO, DETROIT, NEW YORK

TOUGH JOB HEADQUARTERS
℞ Prescription Finishes
Give us your metal coating problem. We guarantee you an answer based on your conditions, and not just a standardized formula.

tion heat. Accordingly, INDUSTRIAL FINISHING put the following questions to Dr. Roberds:

Can high-frequency electric current be used practically or economically for curing or drying fresh paint or enamel coatings on the surface of metal parts and products? If so, is it limited to drying paint coatings on sheet metal parts —or can paint be dried on castings too? If so, is it only effective on certain metals — or can any metals be so treated?

Is this paint drying or curing only in the laboratory stage, or is it used anywhere (if so where) on a commercial basis?

Our readers have asked us about this several times but so far, we have had little practical or authentic information to supply.

Dr. Roberd's interesting and informative reply is included in the following paragraphs:

"In reply to your inquiry concerning the use of radio frequency currents in the drying of paints, let me say that we have done a moderate amount of experimental work in this field, but so far we have not attempted to apply our conclusions to commercial installations. The following represents our findings:

Success of Paint Baking Depends on Paint Used

"1) The success of the method depends largely on the paint used. The drying time of some paints is greatly reduced by heating the underlying surface, while in other cases the paint tends to blister if the drying rate is increased much above that used in ordinary procedures.

"2) Radio-frequency can be used to heat any kind of metal. The efficiency however varies with the magnetic and electrical properties of the metal. Iron and steel heat most easily, while the non-magnetic, high-conductivity metals such as copper and aluminum heat with much lower efficiency.

"3) For practical purposes the object to be heated should be passed through an inductor coil and, for the sake of uniformity, the piece ought to be symmetrical about the axis of the coil. However, odd shapes could be heated by winding special coils to fit them.

Surface of Metal Is Heated First

"4) As you know, the radio frequency currents travel on the surfaces of conductors and therefore the surface is heated first. But if the material is a good heat conductor and if the paint is of a type that requires a minute or more to dry, then a relatively large amount of energy must be put into a heavy casting in order to keep the surface at the optimum temperature. On the other hand, if the casting were iron or steel and if the paint could be dried in a few seconds, then the radio frequency heating would be entirely feasible.

"5) In the experiments performed in our laboratory, with the paint of one manufacturer, we found that the drying time could be reduced from 30 minutes to about five minutes. On the other hand our Princeton Laboratories report that they were able to dry certain paints in 15 seconds.

"6) In general, the applicator coil should remain in a fixed position. The work may be passed through it in a continuous progressive manner, or it can remain stationary for the heating cycle.

"7) The process would certainly be economical for some applications; in others far too costly. I should say that the method would find its best application where the underlying material is thin steel

When you have a finishing problem

. . . here's the man who can help you

He's backed by an organization that has specialized in individualized finishes for more than three-quarters of a century. And he offers facilities that are producing more and more protective coatings for war all the time . . . He's the Murphy service-salesman—technically trained, experienced, resourceful, and up-to-the-minute on modern finishing methods. Why not call him in now? Just phone or drop us a line.

He has wide experience in war-time finishing for such products as

- Airplanes
- Range-finders
- Optical Apparatus
- X-Ray Equipment
- Gliders
- Ration Cans
- Autogiros
- Ammunition Sets
- Plywood Assemblies
- High Precision Instruments
- Gunfire Controls
- Shells
- Gunstocks
- Gas Masks
- Ammunition
- Machine Tools
- Distillation Units
- Tanks—Jeeps—Peeps
- Aircraft Heater Units
- Ammunition Carts
- Windshield Wiper Units
- Motors and Generators
- Fans, Blowers, Exhausts
- Helicopters
- Machine-gun Mounts
- Airplane Propellers
- Navy Bicycles
- Power Cranes, Shovels
- Hospital Equipment
- Dredging Equipment
- Anti-aircraft Searchlights
- Radio Units
- Army Locomotives
- Commando Ramps

MURPHY VARNISH COMPANY

NEWARK SAN FRANCISCO CHICAGO

MURPHY *Protective* COATINGS

or iron, and where the paint can be raised to a relatively high temperature without blistering.

"We feel that the process offers enough possibilities that more research ought to be done by the paint manufacturers to develop paints specially adapted to radio frequency heating.

"So far as I know the process is still in the laboratory stage. However, I do know many people are interested and some are considering the installation of pilot equipment."

Flame-Sprayed Thiokol Saves Propeller Shafts

THE first successful solution to the menace of destructive electrolytic action, which eats away the propeller shafts of Navy chasers, minesweepers and other wooden vessels, has been found to be Thiokol synthetic rubber flame-sprayed onto steel propeller shafts by a new process, according to the Schori Process Corp., Long Island City, N. Y. Heretofore bronze propellers, fitted to steel shafts on wooden vessels, produced an electrolytic action through the union of two dissimilar metals in salt water, with the result that the shaft is so eaten away within a few months that it cannot stand up under high speed operation.

After nearly a year of experimenting with flame-sprayed plastics, which all proved too brittle and could not be easily ground for spraygun operation, Schori engineers found that Thiokol synthetic rubber could be sprayed on the shaft while in position on the ship. The molten rubber hardens rapidly to form a firmly bonded coating with an extremely high abrasion resistance. Since the shaft is completely protected from contact with the sea water, there is no opportunity for corrosion or pitting to set in.

This same coating can also be used advantageously to coat the interior of bronze valves on salt-water pipelines, low temperature condensor plates and other inaccessible but vulnerable underwater portions of steel vessels.

Protectively spraying propeller shaft.

G. R. Varnish Corp. Elects New Directors and Officers

In a series of changes which followed election of a new board of directors by stockholders of the firm, Howard C. Lawrence, executive vice-president of the Michigan Trust Co., became president and general manager of Grand Rapids Varnish Corp., Grand Rapids, Mich. Mr. Lawrence has given up active participation in management of the trust company to assume the duties of his new office.

New directors include Joseph A. Hager, director of sales, and newly elected vice president of the firm; Attorney George B. Kingston, newly elected secretary; Charles F. Anderson, new treasurer; Zeno H. Nelson, an early associate of Wallace E. Brown and long a stockholder in the firm, and Gertrude DeCair, newly elected assistant secretary.

Mr. Hager will continue as sales director, a post he has held for 20 years. Mr. Anderson previously was assistant treasurer, and Mr. Kingston served as counsel more than 20 years. Mr. Nelson is manager of Jackson & Tindle, Inc., wholesale lumber firm, and Miss DeCair was formerly secretary to Mr. Lawrence at the trust company.

A.C. HORN PRODUCTS
1897–1944

DEPENDABLE

A word exactly describing

HORN INDUSTRIAL FINISHES

A reputation for dependability is no accident. Earned only by continuous reliable performance, it is an achievement of merit. Pioneers in the invention of methods and products for protection and decoration. Horn has had 47 years of expecience in providing dependable finishes.

The Horn Policy

"Produce for our customer the finest finishing product for his purpose at the lowest possible cost to him."— A C Horn

Interested manufacturers are invited to enjoy the advantages provided through this experience and trained personnel, available on inquiry — address

A. C. HORN COMPANY
PRODUCTS FINISHING DIVISION
LONG ISLAND CITY 1, NEW YORK

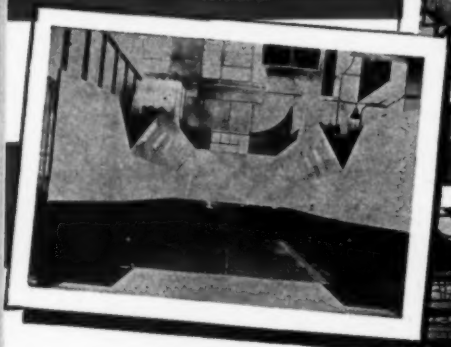
CHICAGO • HOUSTON • LOS ANGELES

These are but a few

Finishing airplane seats with special Binks equipment in large plane plant.

Binks spray booths are so efficient that desk work can be done a few feet away.

Binks down-draft spray booth for finishing equipment in a U. S. Arsenal.



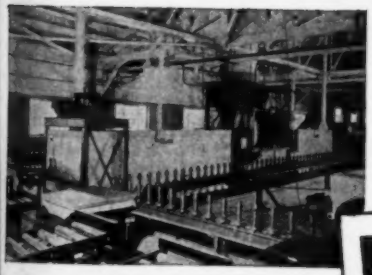
Binks paneling equipment and exhaust system in large machine tool company.

BINKS MANUFACTURING COMPANY

3114-3140 CARROLL AVENUE, CHICAGO 12, ILLINOIS

These are but a few of the hundreds of BINKS spray painting installations that are contributing to America's war efforts. The photographs shown here are some of the more obvious defense installations — the finishing of planes, shells, heavy machinery and tanks. Most of these installations involved special problems . . . the development of tailor-made equipment to meet certain specifications. Not shown are the countless BINKS installations in industries "behind the scenes."

◀ Gigantic spray booth designed and built by Binks for finishing war planes.



▲ Heavy castings and parts are easily sprayed in Binks tailor-made booths.

▲ This Binks automatic equipment coats 1,000 shells an hour in an Ordnance plant.

Binks spray guns, tanks, regulators and hose serve gigantic airplane industry. ▶

New York • Detroit • San Francisco • Philadelphia • Pittsburgh • Cleveland
Milwaukee • Boston • Los Angeles • Seattle • St. Louis • Windsor, Ontario, Canada

Water Thinned Primer Used in Aircraft Work

To save strategic materials, water-thinned zinc chromate and other coatings have been developed to the point where they can be used effectively in regular aircraft finishing.

BY MAXWELL STILES
Lockheed Aircraft Corp.

UTILIZATION of water as a thinning medium in primer paint is one of the interesting and important new developments of the aircraft industry, in its constant effort to save critical materials while continuing to increase its production tempo.

Patented by Lockheed Aircraft Corp., following research work conducted by Glenn B. Weible and Robert J. Burns, research chemists, the new process has proved successful. It is now okayed by operators in Lockheed's finishing department. The National Oil Products Co. of Harrison, N. J., is carrying on cooperative research with Lockheed Aircraft Corp., and has been licensed to manufacture and distribute the products.

Performance Tests Show That It Works

Performance tests on zinc chromate primer indicate the excellence of protective coatings using the formulation developed. The novelty of the development appears to lie in the fact that resin, pigment and thinner are emulsified together as a composite. The resultant dried coating therefore is practically the same in character as that obtained by solvent thinning.

Full scale plant operating tests prove not only that operators like water-thinned primer, but that water-thinned primer has excellent covering power and does not bleed through final finishes, or vice versa.

The usual protective coatings are purchased in concentrated liquid form, thinned with volatile solvent and then applied to the surface to be covered. Most solvents are strategic materials at the present time, due to aromatic content. They are expensive and a definite fire hazard is involved in their use and storage. Toxic vapors are produced by solvent evaporation.

What Research Was Trying to Accomplish

It was conceded that if research could devise a formula for the use of water as a thinner for the various protective coatings, particularly for zinc chromate primer and camouflage finishes, the results would be: 1) evaporation of water, non-strategic and inexpensive; 2) reduction of fire hazard; 3) minimizing of toxicity of thinner vapors. These objects have been attained.

It is a matter of common knowledge that water emulsions have been used for thinning protective coatings of various types for many years. For example, the petroleum

Radio Manufacturer Solves Copper Plate Adhesion Problem . . . CBZ Primer Does It!

Are you having trouble getting paint to hold on cadmium, brass, zinc, copper and similar metals? ¶ Recently, a customer of ours in the radio business eliminated adhesion failure on copper plated parts through the use of CBZ Primer. In fact, he installed an entirely new painting "program", based upon the use of this new CBZ Primer. ¶ Berry Brothers' CBZ Primer improves adhesion by improving the bond. It microscopically "etches" the surface, providing an excellent "tooth" to hold the finish. And it holds the finish permanently—no progressive deterioration—no brittleness with age. ¶ Said one witnessing the quality of finish produced—"I have seen CBZ Primer on many kinds of metal. It is a really outstanding product!" ¶ Berry Brothers' CBZ Primer oven bakes in 10 minutes at 275°—infra bakes in 5 minutes—air dries to recoat in 30 minutes. Economical too—reduces 200%—primes 1100 sq. feet of surface per gallon. ¶ Let us tell you more about CBZ Primer in terms of your product.

BERRY BROTHERS
Quality Finishes Since 1858

INDUSTRIAL VARNISHES • ENAMELS • LACQUERS

DETROIT 7, MICHIGAN • WALKERVILLE, ONTARIO
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industry emulsifies asphalt and sells it as a protective coating for roofs, roads and water tanks. Similarly, cheap water-thinned paints have been sold for popular use. In general, these have been composed of casein, with various pigments. After evaporation of the water thinner, the casein was left as an adherent coating and was practically insoluble in water.

Many attempts have been made in the past to formulate oil-emulsion and resin-emulsion type paints, but these have met with dubious success, either because of the fact that the finished coating was not serviceable when compared with the usual types of protective coatings, or because of the fact that some undesirable feature invariably seemed to develop.

At the start of the research work conducted by Weible and Burns under the direction of W. F. Hamilton, Director of Chemical Research, the larger paint manufacturers were consulted. At first they showed a decided lack of interest in the formulation of water-thinned oil or resin-emulsion type protective coatings. Up to that time no successful formulation had been developed for zinc chromate primer or the various camouflage finishes used by Lockheed.

Since the work was started, and after successful formulations were developed, the Armed Forces of the United States took cognizance of the shortage of thinners and have encouraged the development work.

Satisfactory Formulation Involved Chemical Problems

The formulation of a satisfactory protective coating material is extremely complex. Experimental developments had proved that it was possible to overcome all of the complexities and problems arising in the development of a suitably satisfactory protective coating by utilizing the coating products which had been developed as a result of long years of experience. The only modification necessary was to add suitable ingredients which would serve to allow the utilization of water as the thinning medium. Because the coating ingredients are necessarily water-insoluble and could not be dissolved, the logical method was to disperse the material in the form of a colloid in the aqueous medium. This, it was found, might be successfully accomplished by the use of a certain novel combination of emulsifying and dispersing agents.

The finished water-thinned paint or protective coating material is in effect essentially the same as the old-type material, except that small amounts of the emulsifying agents added render it adaptable for use with water. The physical chemistry involved in the problem is extremely complex and no single material which serves as an emulsifying agent is entirely suitable.

Comparison With Regular Zinc Chromate Primer

The finished water-thinned primer was tested for performance and was compared with zinc chromate primer then used by Lockheed. A detailed comparison of the characteristics of the water-solvent primer shows that in all but two respects the final formulation gives better tests than either of the materials with which it was compared.

1) Difficulties were at first encountered in producing smooth flow-out films. These were overcome by increasing the amount of wetting agent in the materials and also increasing its viscosity. Flow-out films are important only for the dip tank application in production

FINISHES BY ZAPON

WAR-TESTED FOR PEACE

A score of new ZAPON finishes have been born by demands of war—demands that have required them to stand the stress of the 'firing line'. Their duty was PROTECTION under every possible battle condition, including extremes of cold and heat. The results of knowledge so gained will make available new and better finishes for your products after the war.

For they have been war-tested for peace.

You will find their toughness, print resistance, wear resistance, color and general durability even greater than before.

We are already in consultation with many manufacturers who are now planning their postwar products. We invite you, too, to consult us about your postwar plans.

Zapon finishes or coatings cover an almost endless range of uses—many of which have required special research to meet an exacting, particular need.

ZAPON DIVISION ATLAS POWDER COMPANY

Eastern Sales: Stamford, Conn. Western Sales: No. Chicago, Ill.

INDUSTRIAL FINISHES ... *For Your Products of Tomorrow*

and are not a consideration as far as spray application is concerned.

2) Drying time is a characteristic of the thinner and it could not be expected that water-thinned material would set up or dry quite as rapidly as material thinned with volatile solvent. The increased drying time was taken care of in production by the use of accelerated electric drying and by a modification, where necessary, of the handling methods used after the primer was applied.

One of the reasons for the excellent performance of water-solvent primer coatings, compared to those of the usual zinc chromate primer, appears to be characteristic of the chemical combination of the emulsifying and dispersing agents and the pigment.

All experimental work to date indicates that the application of the information developed in this research is feasible for almost any type of protective coating material.

How to Untangle Production Kinks

INDUSTRIAL production develops kinks, especially under present conditions which are too well known to be enumerated and explained here. Certain executives know the kinks are there—somewhere—because volume output or quality, or both, are not what they should be. But these executives are so familiar with accepted procedure or so busy with other pressing duties that it is difficult, if not impossible, for them to place their fingers on the exact causes. If the causes are not located no remedial measures can be put to work, but results will continue to be unsatisfactory; more than likely they will get worse. Knowledge of such conditions has a decidedly bad effect on the morale of workers and foremen. Eventually it leads to a state of indifference which spreads through the organization like creeping paralysis.

In such situations it is often a good plan to bring in one or more well informed engineers from the outside to wrestle with the problem. This will focus on the production process fresh eyes and open minds which, for the time being, are not burdened with other details or responsibilities. A concentrated study can be made of each step in the production process just as though it were being performed for the first time. This kind of unhurried intimate check-up will reveal production kinks that are not apparent to the plant men intent on their individual tasks.

The aim of qualified engineers is to secure not only immediate results but to establish basic procedures (often improved ones) which will continue to yield benefits as long as the need for them continues — and which can be adapted to changing conditions as time goes on.

One of the most deteriorating substances to organic finishes is butter. Warn your wife to thoroughly remove all butter from her refrigerator, kitchen mixer, etc., if she wants to maintain her household appliances until the war is over and new ones become available.

* * *

One of the chief merits of cleaning by vapor degreasing is that, although the solvent cost may be somewhat higher than other cleaning materials, it can be used a number of times, thus giving low cost per unit cleaned.

MAHON
Hydro-Flo
WASHING and PROCESSING MACHINES

In this installation work is conveyed through machine by overhead conveyor. Note that all working parts are enclosed in a cabinet of modern design, yet are quickly and easily accessible.

Planned Precisely *for* YOUR PRODUCT

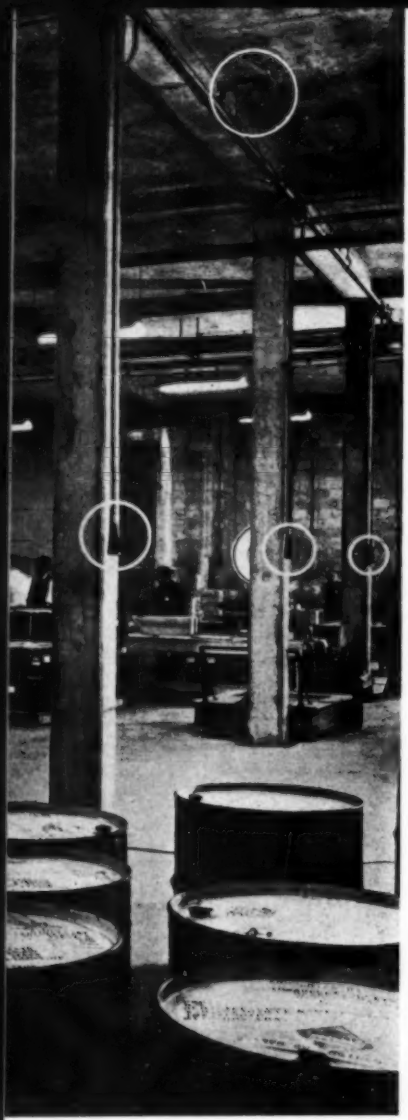
Each industry . . . and each manufacturing plant within each industry . . . has its own individual metal cleaning and processing problems. These problems cannot be solved with antiquated methods and machines . . . nor can standardized equipment be utilized, due to the difference in size, shape and nature of parts and products. The one practical solution is *specialized* equipment . . . planned precisely for your product and to fit the conditions in your plant.

This flexibility of design and use is available to you in Mahon *Hydro-Flo* Washing and Processing Machines. Basically, they are the same. Each incorporates the exceptionally efficient *Hydro-Flo* principle, which directs the cleaning or processing solution against the work from every possible angle . . . top, sides and bottom. In all other essentials, however . . . size, shape, types of conveyors, method of heating, etc. . . . they are designed around the specific work to be handled.

Have a Mahon engineer show you how this modern, compact, entirely automatic mechanism can increase the capacity of your finishing production line.

THE R. C. MAHON COMPANY
DETROIT 11 CHICAGO 4

Manufacturers of Metal Cleaning Machines • Rust Proofing Machines • Hydro-Filter Spray Booths • Ovens of All Types • Filtered Air Supply Units • Hydro-Foam Dust Collectors—and Many Other Units of Special Production Equipment—including Complete Finishing Systems



One of the storage spaces for highly flammable materials, showing multiple discharge nozzles placed on upright posts and against a wall. White ring at top spots one of the several rate-of-temperature actuators on ceiling.

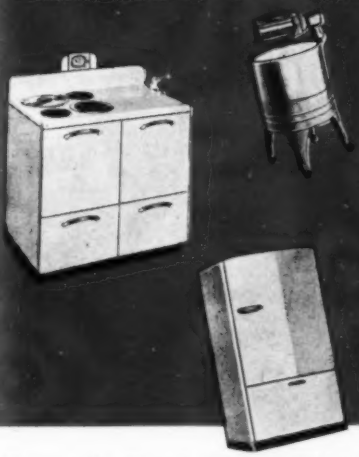
Puts Out Fire Automatically with No Mess

Automatic fire extinguisher system protects stored inflammable liquids from destruction by fire; discovers fire, sounds alarm, shuts fire doors, closes ventilating louvers, stops fans, and discharges carbon dioxide which quickly reduces oxygen content of room air to a point where fire can not burn—and you have no mess to clean up.

THE Philadelphia Naval Storage Depot includes some dozen buildings, of which Building No. 5 is the aviation material storehouse. It is divided by concrete and steel walls into four separate spaces, communicating with each other by self-closing fire doors. In these rooms are stored the paints, oils, greases, glues, dopes, lacquer and other flammable liquids used so extensively on planes of all types. To guard this enormous fire hazard, Walter Kidde & Co. has designed and installed the largest built-in carbon-dioxide fire-extinguishing system in the world, from the point of view of cubic feet of space protected.

Ammunition for combating a fire that may arise in any one of the four rooms is provided by 280 steel

JOHNSON'S WAX-O-NAMEL for Household Equipment



Tomorrow's refrigerators, stoves, washing machines and other home equipment will stay new looking longer, and be easier to clean, if finished with Johnson's Wax-O-Namel, the enamel that contains wax.

Wax-O-Namel gives a uniform, hard, scratch-resistant finish. It's extremely durable — withstands scuffs and bumps to a surprising degree. Resists damaging action of hot dishes, food and fruit acids, cleaners, etc. Wax-O-Namel can be baked in either conventional ovens or infra-red curing banks, and can be easily applied by spray or dip methods.

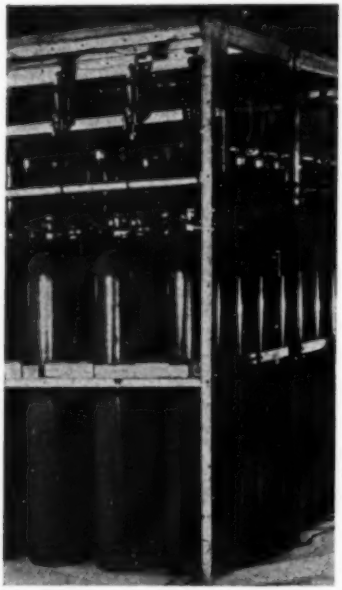
Johnson's Wax-O-Namel may be able to contribute substantially to solving your immediate war production or peacetime finishing problems. Write us for complete information.

TODAY Wax-O-Namel provides extra protection for implements of war.

TOMORROW Wax-O-Namel will provide extra protection and new beauty for postwar home equipment.

Let's ALL back the attack—
buy ANOTHER War Bond!

S. C. JOHNSON & SON, INC.
PRODUCT FINISHES DIVISION
Department IF-44
Racine, Wis.



The carbon dioxide for automatic fire extinguishers is all compressed into liquid form and stored in cylinders which are positioned as shown here.

cylinders, each containing 50-lbs. of liquefied carbon dioxide which will expand about 450 times in volume upon release. The whole seven tons of fire-killing gas can be discharged by means of directional valves into any one of the four spaces, so the most vicious fire could not survive for more than a few seconds.

The cylinders are manifolded in five frames containing 56 cylinders each, one acting as a master control frame. There are four valve-frame assemblies, each including five automatically operated directional valves which, in the event of fire, direct the gas to the particular space involved. Because of the importance of stopping the circulation of air in the presence of fire, each valve frame has two plunger-type switches operated by the valves—one to close a circuit and sound an alarm, the other to open another circuit, stopping the ventilating fans and closing the louvers so that circulating air will not feed the flames.

Gas Is Directed From Discharge Nozzles

Five supply lines lead from the valve-frame assemblies to each one of the four protected spaces. These terminate in a total of 296 shielded discharge nozzles, placed one-third of the distance from floor to ceiling on each of the upright posts and at other strategic spots in the storage rooms. These shielded nozzles deliver gas from the piping system. They eliminate any high velocity jet effect of the discharge which might occur with unshielded nozzles, prevent objectionable turbulence, and accurately control the fire-extinguishing gas, which builds up in a blanket from the floor, thereby providing the highest concentration at the base of the flames, and controlling any spill fire which may be present.

Twenty-four pressure operated trips are incorporated in the supply lines to control the self-closing doors. Passage of the carbon dioxide through the piping retracts a pin, releasing the control weight and allowing the door to close, isolating the burning space.

Heat Actuators Start Automatic Gas Release

Placed about the ceilings at regular intervals are 48 heat actuators, operating on rate-of-temperature rise in the room. Fire causes heated air to rise to the ceiling, expanding the air within

MAKE A START TODAY

for a WINNING FINISH TOMORROW

One of your major postwar problems is the right finish for the products you will offer to a waiting world. Perhaps we can work with you and help you arrive at a solution which will speed your sales and cut your manufacturing costs.

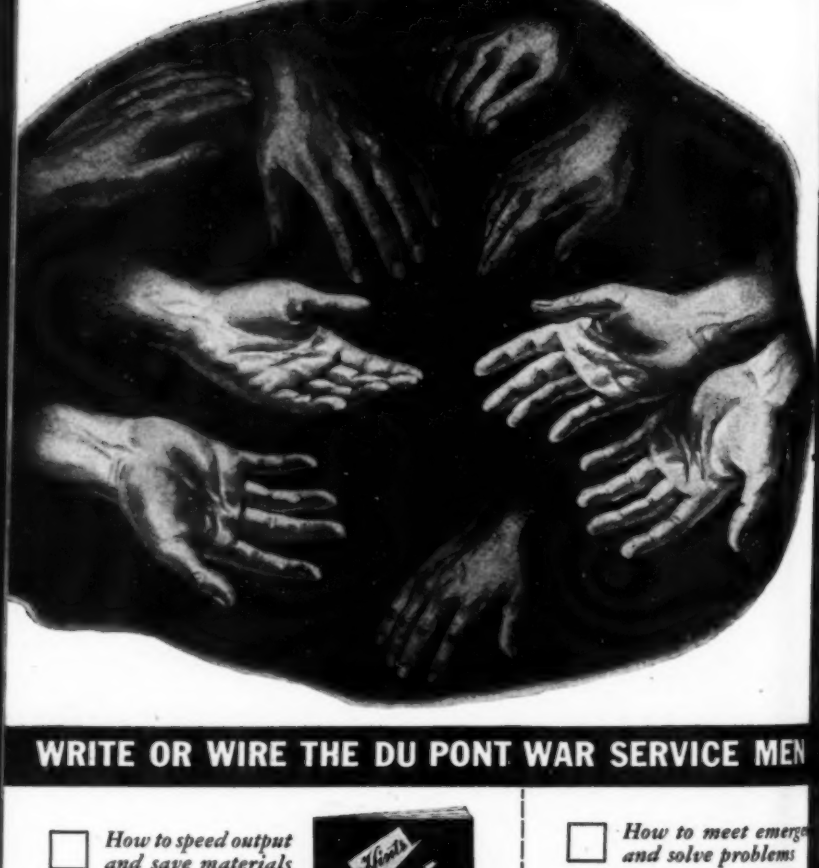
Many firms have already dropped their ideas for postwar finishes into our ample lap. Wouldn't it pay you to take full advantage of the Reliance planning and engineering service which is at your command, without obligation? Postcards reach us!

RELIANCE VARNISH CO., INC.

LOUISVILLE, KY. CHICAGO, ILL.

Rely on Reliance

Case of the PER



WRITE OR WIRE THE DU PONT WAR SERVICE MEN

☐ *How to speed output and save materials*

Handy pocket-size, fully illustrated booklet, *"Hints on Wartime Finishing Economies."* Shows you 11 points to check for greater efficiency and speed on your war contract finishing schedules.

☐ *How to meet emerg and solve problems*

Check here for the help of Du War Service Men—skilled "tr shooters" to straighten out "k in your finishing system *bef after* the trouble occurs. "know how" is at your dispo any war contract finishing. about your trouble. Or wi case of emergency.

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PERSPIRING PALMS

How a Du Pont War Service Man Cured a Case of "Blisters"

THIS WAS THE PROBLEM: A manufacturer of metal filing cabinets began receiving complaints that the finish "blistered." The problem was perplexing because the finish on most of the cabinets "stood up" perfectly in use. In other cases failure of the finish, through blistering, was severe. The manufacturer simply couldn't find the answer. So he put in a . . .

CALL FOR THE DU PONT MAN: From long experience in trouble shooting, he recognized the type of failure. Something was contaminating the metal surface—after cleaning and before finishing. He suspected the perspiring hands of workmen.

But whose hands? In order to isolate the cause, each employee on the finishing line was requested to press his hands to a metal panel. The panels were enameled in the usual way. Delivered to the Du Pont laboratory, they were given an accelerated test for blistering.

THEN THE SOLUTION: Most of the panels came out with a perfect finish. However, on two panels there appeared telltale blisters. Peculiarly, the perspiration of two men was of such character that it was causing all the trouble. When these men were provided with cotton gloves, the case of the perspiring palms was solved. There was no more blistering . . . no more complaints.

When a Du Pont Man is called in like this, he brings to bear on the problem all of his Du Pont training and long years of experience in the analysis of finishing problems.

There's a Du Pont Man near you who will be glad to consult with you on finishing problems. Write to:

E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Wilmington 98, Del.

DU PONT

REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

MAIL THIS COUPON! E. I. DU PONT DE NEMOURS & CO. (INC.) FINISHES DIVISION, WILMINGTON, DELAWARE

SEND THIS ENTIRE COUPON TO:
E. I. du Pont de Nemours & Co. (Inc.)
7150-D, Du Pont Building
Wilmington 98, Delaware

NAME_____

FIRM_____

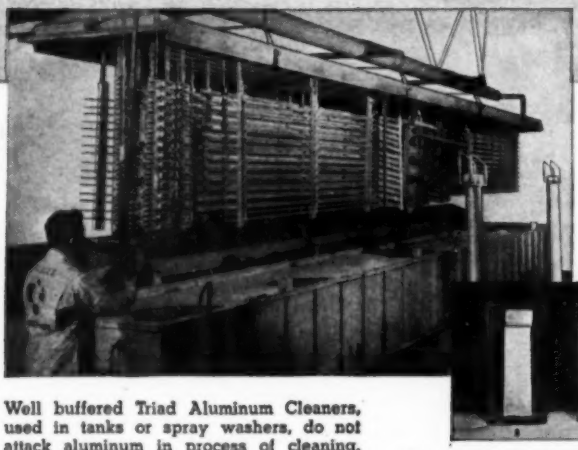
ADDRESS_____

(This coupon good only in the U.S.A.)

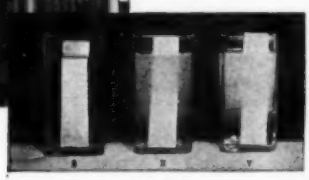
Aluminum

NEEDS THE CLEANING PROTECTION OF

TRIAD ALKALI CLEANERS



Triad Aluminum Cleaner (indicated in photo below as Cleaner B) is a highly buffered material which prevents attack on the softer metals, especially aluminum. Note rapid attack of materials X and Y on polished aluminum strips at normal operation concentration.



Well buffered Triad Aluminum Cleaners, used in tanks or spray washers, do not attack aluminum in process of cleaning. They give the water-break free surface which is indicative of the thorough cleaning so necessary for anodizing and other treatments used to protect aluminum and its alloys from corrosive effects of the elements.

Today, with many production plants concerned with the cleaning of softer metals, Triad alkali and emulsion cleaners are meeting the most exacting requirements. In the cleaning of aluminum or magnesium castings or stampings—the removal of buffing compounds from highly finished surfaces . . . or other cleaning applications—you can benefit by the recommendations which Detrex service men will be glad to offer.

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the actuator. A wave of pressure passes through the tubing to a release mechanism located at the directional valves. Instantly weights drop, opening the proper directional valves, ringing the alarm gong, shutting off the fans and louvers, and starting the time-delay mechanism which allows 35 seconds to elapse before seals are cut and the gas is discharged, so that any worker present will have an opportunity to leave the room.

Carbon dioxide, while non-poisonous in itself, prevents the required amount of oxygen from reaching the lungs, just as it prevents it from feeding the fire, and a person therefore cannot long retain consciousness in a room filled with the gas. The warning signal sounds continuously during the 35-second interval before the gas is released.

Break-Glass Pull Boxes For Manual Operation

Two break-glass remote control pull boxes are provided for each space. They are located at the exterior doors on either side. If a blaze should be detected before the heat actuators operated, a pull of the handle would set off the system by means of a cable running back to the valve frame covering that space.

The Kidde fire-extinguishing system employs carbon dioxide under high pressure (850-lbs. p.s.i. at 70° F.) which means that the gas is delivered through the piping and all the nozzles in a room simultaneously. The tremendous force of expansion of the gas, upon release, does away with the necessity for a pump or any other extraneous force. It can readily be understood that carbon dioxide pouring at a rapid rate from some 80 nozzles evenly spaced about a single room would reduce the percentage of oxygen in the air within a few seconds to the point below which fire must die. A reduction of the normal 21% content to 16% or 15% suffices, in the case of ordinary flammable liquids, and this high-pressure system effects such a reduction in the shortest possible time.

Passage of gas through the distributing pipes operates pressure trips controlling the self-closing doors which cause them to shut, confining the fire to that room, preventing fanning of the flames and maintaining the concentration of gas inside.

Smothers Fire Quickly Without Leaving "Mess"

By means of this type of built-in extinguishing system, fires occurring in large spaces in which flammable liquids are stored, can be quickly smothered, without damage to any of the materials with which the gas comes into contact. Carbon dioxide, a chemically inert gas, does not combine with the products of combustion, even in the presence of heat, and it leaves absolutely no residue or mess to clean up. It does not deteriorate with time, or freeze in any weather, and it can cause no corrosion. This system needs neither pumping machinery or refrigerating equipment. The only attention required is a recharging of the cylinders after use. The storing of the gas in highly compressed form in cylinders obviates the need for large storage space, and their placement is a matter of convenience.

Esters, such as amyl acetate, ethyl acetate, etc., are not only valuable solvents but are also widely used in the preparation of artificial perfumes and flavors, because of their pleasant fruity odors.

Intelligent Selection of Finishing Equipment

BY W. BEACHAM

Who is consulted and what is it that swings your decision to buy finishing equipment? Do you give any weight to the advice of reliable engineers who can look ahead and plan for emergencies or changes in production or product design? Or do you leave it up to your purchasing agent to buy what he can get at a lower price?

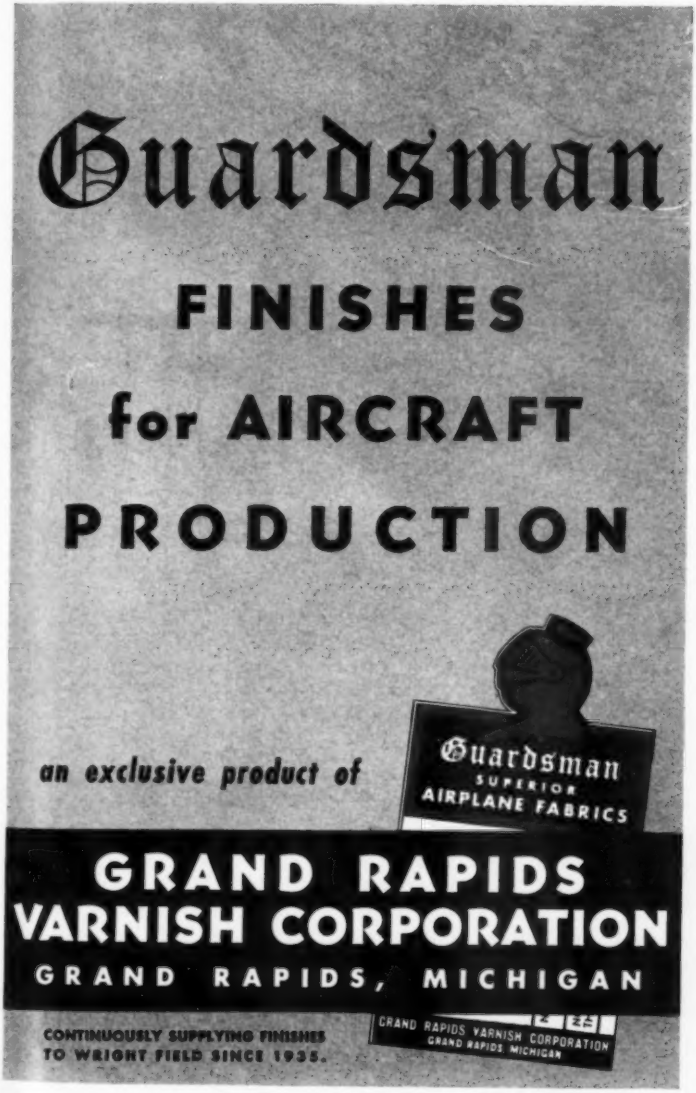
AUTOMATIC spray equipment is doing a great job during these trying times—but will it continue to give service after your present order runs out? I have seen many machines built for a specific job, and then later the specifications were suddenly changed, leaving the automatic sprayer idle.

Recently I was looking at a neat compact conveyor booth and spray gun unit that would fit into an odd corner to spray 20-mm. shells. It was standing idle, covered with dust and dry paint. Upon asking why it was not in use I was told that, "The spec's have been changed and it can't be used." When that unit was bought and installed it gave excellent results; but the buyer did not figure any changes in the order, consequently idle tools.

Buying Just for Now, or For Present and Future

Mention a case like the above to the purchasing agent and he will probably resent it and demand: "Am I responsible for orders being changed?" Yes sir, I am sorry to say you are responsible; not for orders being changed, but for idle equipment you most certainly are. Had you bought a piece of equipment that could be used for the painting of other items in case of accidents, emergencies or changes in production, you would be able to proudly stick out your chest, instead of trying to alibi. Your spray booth should be large enough to allow your men to spray by hand —not a specially built 2x2-ft. cabinet suitable for spraying thimbles.

The conveyor may look very nice when small and compact, but suppose the next job you try to run is three times as large as the last order; or maybe you want to dry the paint faster, or the humidity may be high, calling for heat—either infra-red or high frequency electric drying. Do you have room to install it? Any finishing conveyor you buy should be strong enough to be capable of being changed over from one job to another. Making new work-holders for the conveyor is a minor item compared to installing a complete new conveyor, even if you can get it by the time you want it. *(P. 62)*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While visiting a manufacturer in Indiana, I sat in on a conference wherein the company's chief engineer pointed out to his superiors that the automatic equipment just installed could be readily converted into the painting of refrigerator parts (their peacetime business). That engineer was looking ahead. If the war ends tomorrow, his purchase will still be a good investment.

Lack of Foresight . . .
Idle Machines Later

Everyone takes great delight in razzing the purchasing agent. He is naturally trying to save his company money. He doesn't know spray equipment or paint, and sometimes he makes mistakes in buying what he thinks will do the trick. It causes hard feelings in the finishing department. If the finishing foreman wants one thing and the P. A. buys something a little cheaper, from that time on the finishing foreman lays in wait for the time when he can point out something that discredits the purchasing agent. These minor ill-feelings are unfortunate. They interfere with that close understanding and cooperation which should prevail among the various departments of a manufacturing organization.

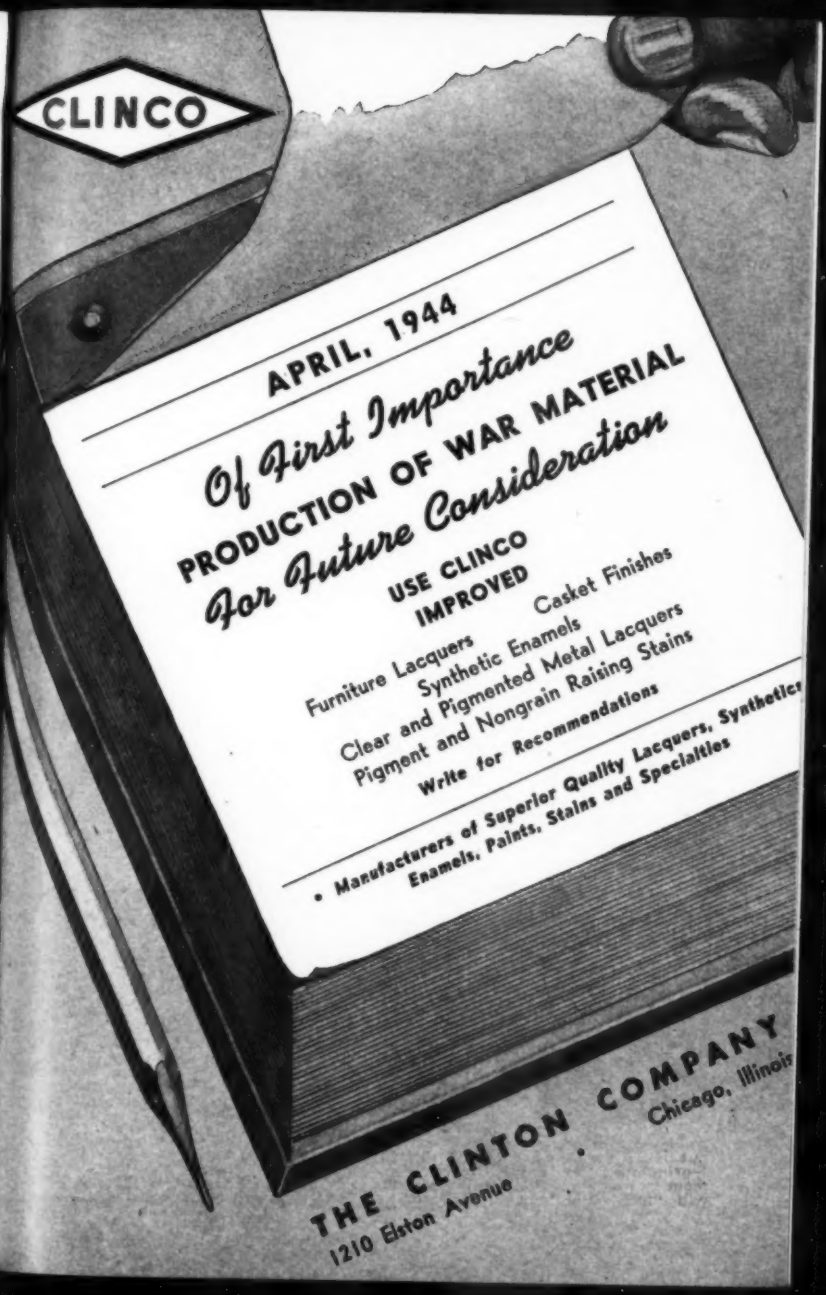
Then, too, salesmen are to blame for some of this idle machinery. Some salesmen seem to be able to sell the buyer almost anything, regardless of what the heads of the engineering and finishing department say. Perhaps your reaction to this statement is to the effect that, "No dam salesman can sell me if I don't want to buy." May be, but I have a copy of a typewritten sales speech that I'll bet you cannot resist. I know the racket underlying this speech, which was given to me by a salesman who made a good living with it. I would have quite a job to avoid digging into my pocket if it were recited to me.

I only mention this to bring out the point that the purchasing department, when acting alone, can be hoodwinked into buying a lot of stuff, regardless of its need. A large number of companies have come to realize this and I am pleased to see evidence that they are changing their tactics. The salesman of the future will be an engineer who can prove his methods to the buyer's engineering department; and he will live with the job until it is completely installed and in operation, thereby saving the buyer much time and money. As a result of this type of intelligent planning and buying many of the causes of idle machinery will be corrected.

What I Discovered and
How I Was Treated

The Indiana manufacturing company previously mentioned is well worth a few lines, as I think many of us could benefit from the way they acted when I was there. Before I had been in the plant an hour I noticed there were no Misters. It was Dane, Wally, Fay, Henry and Herb. Within five minutes I was not Mr. Beacham; it was Bill and I remained Bill all the time I was there. It is surprising how that little item helped.

The equipment was installed and was producing 1000 articles per hour, regardless of the fact that only 800 per day had been produced before the automatic equipment was bought. However, 1000 per hour was not enough. It had to be 2000 per hour. I was called into the office and noticed everyone's nerves were a little frayed from the rush of production, more production, and still more. *(P. 64)*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I was asked what could be done to speed production, but the point I want to bring out is the way I was asked. They did not say, "Mr. B., what would you suggest?" If they had, I would naturally have answered, "Well, gentlemen, the equipment was not intended to go faster. However, I will take the matter up with our home office and see what can be done." No, they treated me as if I had been in their employ for years.

"We Want More Production; Got Any Suggestions?"

The Assistant Factory Manager said, "Say, Bill, we want more production. Got any suggestions?" Well, I felt quite at home with that remark and made the suggestion that we make a few changes, which the General Manager did not like. A friendly argument was soon in full swing, in which I joined. Within 10 minutes an answer to our difficulty came out of that discussion. No one stopped to carefully phrase his sentences, as one would do if he had been addressed as Mr. So and So, because Mr. Manager and Mr. Engineer must be careful not to show ignorance on any subject. But as Dane or Wally, he could say "I don't know," or "You are full of ——," or something to that effect. The frayed nerves were also given a chance to relax which, to these men, was as good as a few hours sleep.

Before many hours had passed, instead of the 800 pieces per day from 60 people,* we were producing 2000 per hour with ten people, including packing. Later this was stepped up to 2500 per hour.

An important operation that precedes but leads up to painting the product —grinding off burs and ragged edges from a rough casting so the surface will "finish up" smoothly for paint.

*I know this sounds impossible but it is correct: "From 800 per day, with 60 people, to 2500 per hour with 10 people." Before automatic equipment was installed, the inside of each shell had black acid-proof paint poured in; it was shaken; the excess paint was sucked out; the shells were sprayed outside, two coats, with an enormous amount of overspray; the paint coating was baked, and then the threads in the opening of each shell had to be cleaned of all acid-proof paint, with a wire brush before inspection.

Monsanto Chemical Co. Takes Over I. F. Laucks, Inc.

Monsanto Chemical Co. has acquired I. F. Laucks, Inc., of Seattle, Wash., manufacturing chemists and leading producer of plywood glues. The transaction was announced jointly in St. Louis by Charles Belknap, president of Monsanto, and in Seattle by H. P. Banks, vice-president and general manager of I. F. Laucks, Inc.

Through the transaction Monsanto will acquire the two Laucks plants in Seattle, and other company interests at Vancouver, B. C., Los Angeles, Portsmouth, Va., Lockport, N. Y., Stanbridge, Que., and interests which Laucks holds in companies in Australia and Sweden.

Since its founding in 1920, the company has experienced a steady growth.

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Postwar Metal Cleaning

A quick glance over different methods of cleaning surfaces of metal before painting. This will have to be considered in your postwar production plans.

BY CARL L. JENSEN*

MANY manufacturers have come to realize the importance of thorough metal cleaning and surface preparation in connection with the painting or finishing of their war products, since the majority of them have been required to use Government-approved paints and could not blame paint failures on the quality of paint used. In a great many cases they found that their paint failure trouble lay in improperly cleaned metal.

In the keen competition that will certainly follow the war, this forced education will not be readily forgotten by "live-wire" manufacturers. This will be to the advantage of paint manufacturers, since the protective qualities of paint will become more apparent in the life of all painted products.

Reconversion Planning; Clean Metal Before Painting

A number of satisfactory metal cleaning and surface preparation methods existed before the war, but most manufacturers hesitated to disturb their production lines to the extent that would be required to insert an extra operation, regardless of its value.

In the reconversion from wartime to peacetime production, most manufacturing lines are going to have to be revised, just as they were when the switch was made to wartime production. This allows an opportunity to set up an adequate metal treatment process without hindrance to production.

It will be a mistake if the manufacturer assumes that, since his particular metal treatment process was satisfactory for war production, the same process will be satisfactory for postwar production. He may be making an article of a different type of metal which goes through different fabricating operations, and which is a totally different shape or size than his wartime product. *All of these factors should be taken into account now in the planning, so that valuable time will not be lost in the reconversion process.* In view of these possibilities it may be helpful to review the various cleaning methods in use, not making any specific recommendations, since this will have to be determined in individual cases.

Scale, Grease, Oil, Dirt, Buffing Compounds

Most metals in the process of fabrication acquire a layer of scale, with an added layer of grease, oil, shop dirt, buffing compounds, etc. In perfect metal cleaning both of these layers are removed, although in some cases the ultimate use of the article may not warrant the removal of the layer of scale, if it is not excessive. However, it must be remembered that if the scale

*Chemist at Chicago, Ill., plant of Zapon Division, Atlas Powder Co.

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is not removed the life of the paint film will be shortened accordingly. In any case, the grease film containing various foreign matter must be removed.

Petroleum Solvent Cleaning; Solvent Vapor Degreasing

In general, petroleum solvent cleaning, either by dipping or by wiping with cotton waste soaked with solvent, is not especially recommended because of the extreme fire hazard of such a method. In addition, the solvent quickly becomes contaminated by the oil and a thin film of oil is left on subsequent work.

Solvent vapor degreasing has become rather popular, especially since it readily removes oil and grease from work of intricate shapes, or work containing many seams. The general principle of this method depends upon dissolving the oil or grease by a non-inflammable solvent in a vapor state. Such a solvent as trichlorethylene is satisfactory for this purpose. The cold metal, entering the vapor chamber, causes the solvent to condense upon the metal and run off in a liquid state, carrying the oil and grease with it.

Since the vaporizing temperatures of oils and greases are high, as compared to that of trichlorethylene, we are assured of clean solvent vapors at all times. It is necessary, however, to add a stabilizing agent to trichlorethylene, since it is subject to decomposition under the influence of light, heat, moisture and oxygen. One of the decomposition products is hydrochloric acid, which makes it essential that the decomposition be inhibited. It is therefore advisable for users to purchase their solvent from concerns specializing in degreasing equipment.

Variations in degreasing equipment are now available in which the metal is first sprayed with or immersed in hot liquid solvent, then cooled and given a vapor degreasing as a rinse. This latter method aids considerably in removing foreign matter that is insoluble in the solvent for the oil.

Hot Alkaline Solution, Followed by Rinses

Another popular method of grease removal is to emulsify the grease and oil in a hot alkaline solution of pH-12 or greater. This method is limited, since many metals such as tin, zinc, aluminum, or their alloys are etched or corroded by alkaline solutions of this strength. This method also requires a good rinse, since residual alkaline materials are harmful to any paint film that is applied later.

A good rinse may be made by adding a small amount (0.1%) of phosphoric or chromic acid to the rinse water to effectively neutralize any alkali that may be left on the work. Neither of these two acids will harm the paint film which is later applied. This rinse should be kept hot and the work that is placed in it should remain long enough to reach the same temperature as the bath. It should then be removed and dried as quickly as possible.

Flame Priming

Flame priming is finding some use in structural work, but will probably not find much use in average manufacturing. In this process the oil and grease are burned off the metal by means of an oxy-acetylene flame. In addition, scale that is not tightly bonded to the metal is loosened because of the sudden thermal expansion of the metal. Any scale that remains is dehydrated by the heat and converted to black mag-

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netite, a more stable iron oxide, by the reducing portion of the flames.

Pickling With Acid Solutions

One of the more common methods of removing scale is to pickle the metal; that is, dip the metal in a solution of some mineral acid which reacts with a thin outer film of the base metal and thus destroys the bond of scale to the metal, allowing it to fall off into the tank in which the operation is performed.

Sulphuric acid is widely used for pickling. It may be used in concentrations up to 20% by volume, the solution being maintained at a temperature of 160° to 180° F. This type of solution is widely used because of its comparatively low cost. However, muriatic, nitric or hydroflouric acid may be used. Muriatic acid is useful for removing light scale deposits. Commercial muriatic acid may be diluted in the proportion of one part of acid to two parts of water, and used at room temperature.

After pickling, regardless of the acid used, there should be a cold water rinse, followed by a hot alkaline rinse. This, in turn, should be followed by a rinse of the type discussed in alkaline cleaning. Acid-type cleaners are also available, which use phosphoric acid as a base, which often proves advantageous since this acid leaves the least harmful residue.

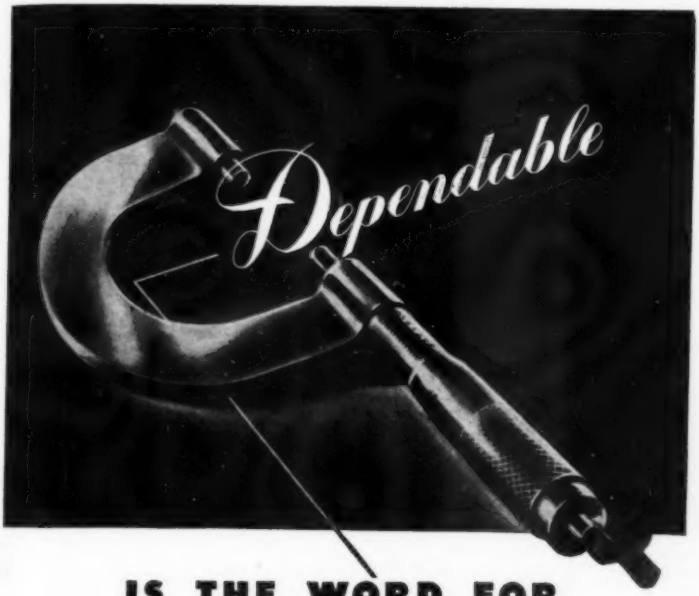
Blast Cleaning With Dry Sharp Abrasive

Blast cleaning with dry abrasive (sand blasting) is often employed for scale removal, especially when the articles to be finished are moderate sized castings or pieces of a comparatively simple shape. Compressed air is used for blasting an abrasive against the work. The abrasive, in turn, wears away the scale. This process has a disadvantage, when rough pitted metal is used in fabricating the article, since the abrasive does not readily reach the scale contained in the pits. [Some authorities may differ on this statement.] In addition, if the same abrasive is used over and over again it becomes increasingly contaminated with particles of scale and will tend to leave residual active scale on the work.

Rustproof Treatment Applied to Bare Metal

Several manufacturers have found it to to their advantage to give the cleaned metal further treatment to inhibit future corrosion. There are several such processes the use of which are, for the most part, patented. In general, they consist of creating a thin film over the base metal, thus separating the paint film from the base metal, which tends to inhibit corrosion. These films are of different varieties, there being phosphate films, films caused by the action of chromic acid on the metal in the presence of an activating agent, a thin film of tin deposited in the course of a direct current electrolytic pickling process, and a zinc phosphate film deposited by an alternating current electrolytic cleaning process.

Manufacturers have their choice of several methods and materials which adequately clean fabricated metal articles before painting or finishing. During the course of war production, manufacturers have become increasingly aware of these processes, and of the fact that the use of high quality paint is but half the story in satisfactorily painting metal surfaces. Paint manufacturers are looking forward to the day when the cor-



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rosion resistance of organic finishes will be able to function with a greater degree of success, because of proper metal preparation before applying a protective paint.

What Containers to Return, and Why

FOR THE benefit of all concerns who buy paint and allied materials such as putties, caulking, roofing compounds, etc., in 5-gallon containers and steel drums, here is a bit of helpful information that may save considerable time, money and confusion:

If you receive materials in what are known as "returnable steel pails" and "steel drums," be sure to instruct your foreman and workmen to take special care of these containers, and under no conditions permit them to be handled or tossed about in such manner as to impair them for future use. First, because the manufacturer or jobber from whom you purchased the material has charged you $1.00 deposit for each 5-gallon container, and $3.50 for each returnable steel drum. Unless you can eventually return containers and lids in reasonably good condition, you are simply out so much good cash.

Second, your Uncle Sam has a healthy and vital interest in just where all these metal containers are and how well you look after them. Under a special Limitation Order No. L-197, the Government prohibits (with certain reservations) the use of 5-gallon metal pails and steel drums for paint packing and shipping. That means that manufacturers can, therefore, use only such metal containers as were on hand prior to issuance of this limitation order. The manufacturer must conserve as well as retain ownership of every such container in his possession or in the hands of his customers. It is also well to remember that you are authorized to make return shipments of such containers at the expense of the manufacturer.

Generally, it is preferable that shipments be returned, if possible, by the same shipping service as delivered the original materials. Bear in mind that the rate of deposit charged you for these containers does not necessarily represent the actual cost; the deposit charge is more for the purpose of enabling the manufacturer to keep up with his containers and of sharing the responsibility with you for their proper use and safe return.

In this connection make certain that each manufacturer or source of supply receives only the containers that are his. Otherwise, you are liable to the manufacturer who receives those containers that are not his. He has the right to re-ship them to you and collect for freight both ways.

In making return container shipments, make sure that no "non-returnable" containers are included. Do not return wooden barrels or certain types of light-metal "square-top" cans. For more efficient results, instruct your foremen or superintendents to personally inspect each return shipment, making sure that no hopelessly damaged containers or 5-gallon cans without lids are included. Generally, each manufacturer indicates on the invoice covering every shipment just how many containers, drums, etc., are returnable and subject to the standard deposit charges.

Right now, with all your other problems and worries, the subject of empty paint containers may

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seem trifling, but don't treat it lightly; it involves ready money and can very conceivably cripple your delivery service. If this recommendation means anything to you, you'll get busy right now and see to it that all empty containers in your hands or on your grounds are promptly slated for shipment to the right supply source.—A. T. MILLER, Service Dept., Lasting Products Co.

Developing Postwar Finishing Materials

MOST of the finishing material manufacturers are busy today planning and formulating materials for postwar finishes. They are spending a lot of time and money to this end.

While our "war finishes" on civilian goods are, in most cases, not as good as prewar finishes, we are using them and getting by, as this is the only thing we can do. Our customers realize that we are doing the best we can at the present, so they don't kick.

After the war, when the customer may not have as much money to spend, he will want more value for his money. So the furniture manufacturer will find the market a "customer's or buyer's market" instead of the "seller's market," as at present. He realizes that his customers will demand better finishes and he, in turn, will demand better finishing materials from his supplier.

I am sure that time and money spent in developing new materials will be time and money well spent. Also, I am sure that the fellow who does not plan to produce improved postwar finishes will face a lot of difficulties from his more alert competitors. Finishing material houses have done a swell job in developing substitutes for civilian goods during this war, and I am confident that they will do a more marvelous job in producing postwar finishes.—H. W. CHESTER.

Sherwin-Williams Appoints Van Cleve, Zappert

The Sherwin-Williams Co., paint and chemical manufacturers, announces the appointment of Mr. B. M. Van Cleve as General Manager of its Pigment, Chemical and Color Division, with headquarters in New York City at 295 Madison Ave. Succeeding Mr. Van Cleve as New York Manager of the Division, is Mr. T. H. Zappert who, for the past five years, has been a representative at the New York office. Mr Van Cleve completes 25 years of service with the Sherwin-Williams organization this year.

New Meyercord Exhibition at American Furniture Mart

The Meyercord Co., Chicago manufacturers of decalcomania, and originators of Sans-Arb and Sans-Marb lacquer veneer, are presenting an entire room done in these versatile finishes at the new Meyercord Salon, American Furniture Mart, Chicago, Ill. Walls, modern furniture, lamps and accent pieces have been finished in a variety of interesting and unusual re-creations of fine wood grains and marbles.

Among the lacquer veneer finishes shown in the current exhibit is an exquisite pattern of rose debrignoles marble used to top a low 42-in. circular table of classical design; an all-over black and gold marble finish on a strikingly original coffee table and repeated on the base of a pair of modernistic lamps. Re-creations of thuya and macassar ebony wood grains have been used as the finish of a modern functional desk to illustrate the beauty of contrasting coloration of foreign woods. French walnut lacquer veneer trim highlights a crash upholstered sofa, flanked by Regency inspired tables in rich mahogany crotch finish.

The salon is open by appointment only, due to the present limited personnel, and visitors are advised to write to The Meyercord Co., 5323 W. Lake St., Chicago 44, Ill., for available dates.

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BLEACH: (KEN WOOD PROCESS) Gal.....Quart

Aspen Concentrate
Color Dissolvent
Decolorant

(Descriptive Circular)

BRUSHES: .....Dozen.....Each

Fitch Flowing
Badger Flowing
Bristle Brushes
Artist Brushes

(Photographic Pamphlets showing complete line of all types)

CEMENTS:.....12 Doz.....6 Doz.....1 Doz.

Wood Cements, Shellac Sticks
All shades

(Color Card for the asking)

COLORS .....5 LBS.....1 LB.

Ground in Japan,
Ground in Oil
Dry Colors

(Complete list and color card available)

Illustrated catalogue of complete finishing materials that will take care of your finishing requirements.

NOTE—Do you Need Steel Wool?—Write. We May Help.

H. Behlen & Bro., Inc., 10 Christopher St., N. Y. C. 14

. . . from DeVilbiss Guns!

● This fighter protection is *paint protection* given to fighter planes and fighters' huts—and it's sprayed from DeVilbiss Guns.

The ten DeVilbiss Automatic Guns at the Cincinnati Sheet Metal and Roofing Company (upper left) spray 148-inch-wide metal sheets that make huts for our fighting men—applying 120 gallons of non-reflecting, anti-corrosion paint an hour. The pretty DeVilbiss Gunner at Brewster Aeronautical Corporation (lower left) is protecting a Navy plane from sea air corrosion and its pilot from blinding sun-glare.

When buying spray systems these days, consider their conversion advantages. All individual DeVilbiss parts are not only engineered to do their particular job well, but to operate perfectly with the rest of the system. Thus, conversion is simple, efficient and low cost.

For high-speed, high-efficiency war production spray systems that will help win the war and prepare you for peacetime, rely on the spray pioneer—DeVilbiss.

THE DeVILBISS COMPANY • TOLEDO 1, OHIO
Canadian Plant: WINDSOR, ONTARIO

DE VILBISS
Spray Systems

SPRAY EQUIPMENT • EXHAUST SYSTEMS
AIR COMPRESSORS • HOSE AND CONNECTIONS

Materials Supplies Equipment

Versatile Paint Drying Oven Set-Up

The new combination dryers announced by J. O. Ross Engineering Corp., provide both continuous and batch drying facilities in a single streamlined unit. Automatically controlled doors at opposite ends of the dryer permit its use as a tunnel dryer for continuous large-quantity production. The material passes through four separate zones, allowing the use of the proper drying cycle. Overhead doors completely separate each zone, except during the moving of the trucks. An ingenious air-distributing system directs the air in alternate directions to insure uniform drying on all trays.

Along the side are other doors that open to four distinct and separate compartments that may be used for batch drying. This arrangement permits drying four different materials without any danger of contamination.

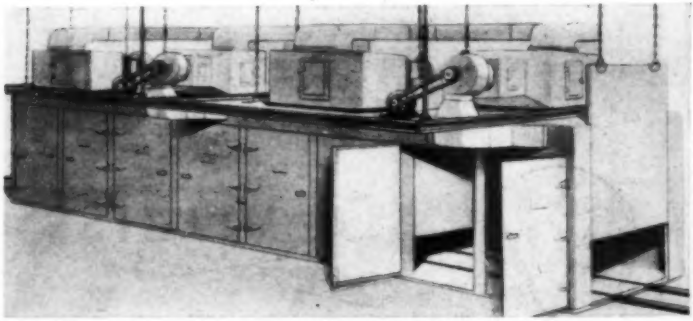
One of the major features of this advanced type dryer is the arrangement of entirely separate controls for each compartment. These controls operate to maintain any desired condition of humidity and temperature in each compartment.

Full information concerning this remarkable unit that properly handles large production or small batches in the same dryer may he had by writing to J. O. Ross Engineering Corp., at 350 Madison Ave., N. Y. 17, N. Y.

Better Aircraft Putty

Aircraft putties heretofore in use either shrank considerably, became brittle with age, or were not flexible enough to withstand vibration, particularly at the low temperatures of the stratosphere. Also, finishing operations were retarded because previous putties dried slowly. Synthetic resin types stick to the putty knife during application.

The new Du Pont No. 228-711 aircraft putty has a buttery consistency and stays in place. It displays no tendency to flow and therefore maintains the desired surface contour. It does not sag on vertical surfaces. Both fast-drying and exceptionally low



Either continuous conveyorized drying or batch-type drying via side doors.

Service

● Whether your paint problem is new and unprecedented or merely altered by war, Glidden can help you find the answer quickly. Constant wartime research with non-critical materials has led to discovery and development of new and better products.

This research, plus Glidden's many years of experience in solving specific paint problems, has produced a vast reservoir of practical "know-how" of all kinds of industrial finishing.

The strategic location of eight Glidden plants and research laboratories makes these facilities available to you overnight.

Glidden is prepared to supply any finish required by government bids or contracts and to work with you on postwar paint problems. Just drop us a line.

THE GLIDDEN COMPANY
CLEVELAND 2, OHIO

TIME-TESTED

BOMBAY BLACKS

Glidden's line of Bombay Blacks is unique. It embraces formulations adaptable to every conceivable combination of climate, weather, methods of application, methods of drying and allowable cost. In fact, the line of Bombay Blacks is so complete and so flexible that Glidden can meet any specifications with virtually a tailor-made finish. Ask for a Bombay Black demonstration.

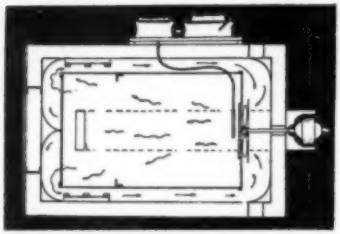
GLIDDEN *Pacemaker in Paints*

in shrinkage, the putty weighs one-fifth less than conventional putties, always an important factor in aircraft. The product is under test by a number of major plane manufacturers.

Now available only for war uses, the Du Pont aircraft putty is expected to have postwar value for such

Six-Bladed Fans For Ovens by Koch

A 6-bladed fan, which allows a more uniform distribution of hot air through the oven, has been adopted as regular



View showing how fan directs air flow.

equipment on all standard cabinet ovens manufactured by George Koch Sons, Inc., Evansville, Ind. Replacing the 4-bladed fan formerly used, the change increases oven efficiency and adds to the economy of operation.

Meyercord Lacquer Veneer Finishes

Since the curtailment of wood and metal, decorators and manufacturers have leaned more heavily on lacquer veneer finishes to provide surface beauty and interest. Meyercord lacquer veneer finishes enable the industry to obtain the effect of rare woods and marbles not commercially available, thus providing the decorator with an unlimited repertoire of dramatic new materials with which to work.

The company has found that the product appeals to the creative designer or decorator because it offers abundant material for imaginative play in both wood and stone, even reptile skin, precious jewels and fabrics. Millions of square feet of Meyercord lacquer veneer have been used on interior walls, radios, furniture, lamps and art objects.

Meyercord lacquer veneers are of practical interest to manufacturers because they can be cut to dimension and applied to virtually any shape, flat or molded, to any smooth surface, whether wood, metal, composition, plastic or glass.

Application speeds on line production up to 4500-ft. per hour have been attained. Lacquer veneer is impervious to moisture and may be treated by rubbing, over-toning, top-coating with any standard wax, lacquer or vvarnish type finishing material, according to The Meyercord Co., 5323 W. Lake St., Chicago 44, Ill.

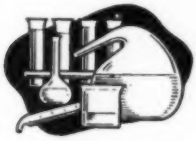
Fireproof, Non-Skid Paint for Ships' Decks

A new kind of paint, made of crushed industrial garnets and a new resin that won't burn, has been produced for the U. S. Navy. The paint is used to cover steel decks, to render them non-slippery regardless of wet or oil, and immune to the tremendous heat of bomb, shell and torpedo flashes which set ordinary paint to burning furiously.

This material is called "Dektred" (Goodyear Rubber Co., Akron, Ohio). It can be applied with a trowel or, like ordinary paint, by spraying. The garnets come from North Creek, N. Y. The paint is used on weather and flight decks especially gun emplacements, and in quarters, passageways, landings and stairways.

The thickness of the paint film is about ten times that of ordinary paint. The microscopic garnets stand a crushing weight of 2½ tons per square inch. In a scrubbing test, 1,000,000 scrubs by a brush wore away the fibers of ten brushes and left the garnet paint unchanged. Scientists claim its durability is due to the fact that the garnet points, sticking out above the resin which binds them, hold all the

MARIETTA *Fine* FINISHES



★ When you need a finish that's different, a finish that's an improvement over your present one, or a finish that will cut operations, save finishing time or money . . . the skill and experience of American-Marietta technical experts will find a way to create and produce just what you want.

AMERICAN-MARIETTA COMPANY

MARIETTA CHICAGO HIGH POINT

A-M

FINE FINISHES SINCE 1890

weight, without letting shoe soles get down to the binder.

The resin bonds to steel. It can also be used on wood, concrete and other types of surfaces. It resists oil, grease, salt, sulphur, soap and various other cleaners.—L. W. FINLEY.

3-M Adhesives, Sealers and Coatings

Adhesives have numerous uses other than that of bonding materials together. Sealers, for instance, have been developed to meet special war production requirements, such as sealing riveted joints in airplane gas tanks, sealing plane pressure cabins, sealing naval gasoline storage tanks and an endless variety of related uses. 3-M sealers are free flowing and have high resistance to heat, water, aromatics, and other destructive elements. After setting they maintain their flexible and adhesive qualities.

Another type of adhesive with an assured future in postwar industry is used for coating purposes. Adhesives have proved efficient as protective linings in pickling and plating vats, in heater tubes, and as protection against the corrosive action of exhaust gases. Another large use of 3-M adhesives is for coating the underbodies of automobiles, trucks and passenger coaches on railroads as a protection against abrasion, rust and corrosion.

Spraying sound deadener on metal.

3-M coatings can be applied by brushing, dipping or spraying. The most efficient method of application is determined by the shape and size of the object and the type of compound used. Insulation against heat, cold and noise for postwar automobiles, busses, railroad coaches and airliners, will be much simpler and more economically applied.

As authorities on the fascinating subject of modern adhesives, the Minnesota Mining & Mfg. Co. welcomes special problems in adhering, sealing, insulating and sound deadening. The well-manned and competent 3-M Engineering and Research staffs are at the service of all business firms who have problems of this type. Write the Adhesive Division of Minnesota Mining & Mfg. Co., 411 Piquette Ave., Detroit 2, Mich.

Transparent Envelopes For Factory Tickets

Kingsbacher-Murphy Co., Los Angeles, is now manufacturing K-M Transparent Factory-Card Envelopes made of plastic for holding blueprints, work orders, time sheets, record cards, etc. The purpose of these transparent plastic envelopes is to protect factory production records from soiling and moisture. The K-M envelopes are flame-proof, soil-proof and moisture-proof. Substantially made with bound edges, the envelopes are available in all sizes and in four styles. Kingsbacher-Murphy is located at 683 Santa Fe Ave., Los Angeles 21, Calif.

"Acrawax C" Improves Lacquers, Varnishes

Salt spray resistance and moisture proofness of lacquers and varnishes can be greatly increased by the addition of small percentages of Acrawax C powdered, a synthetic wax produced by the Glyco Products Co., Inc., 26 Court St., Brooklyn 2, N. Y. Unlike natural waxes, Acrawax C does not

The answer to

YOUR PROBLEM

may be in

OUR FILE

We invite you to submit your urgent or difficult finishing problems to our staff of experts for quick action.

RANDOLPH

FINISHING PRODUCTS CO.

DOPES • LACQUERS • ENAMELS

retard the drying properties of the lacquer or varnish. The use of Acrawax C also improves the flow-out and helps pigment suspension.

One half of 1% Acrawax C powdered, incorporated into a 28% solids urea-formaldehyde alkyd-modified clear baking varnish, gave a film on a steel panel which after baking at 300° F. for 30 minutes resisted a concentrated salt spray (20%) at 100° F. for 144 hours. The Acrawax C powdered should be treated as a pigment and ground into the resin with part of the solvent. The clarity of the varnish is unaffected. Further information, samples, etc., can be obtained from Glyco Products Co., Inc.

New Preservative Stains

New Ordnance Department Preservative Stains, under specifications 3-189 and 3-190, are among the several new and important items recently added to the regular line of finishing materials manufactured by V. J. Dolan & Co., 1830 N. Laramie Ave., Chicago, Ill. These are stains designated for fungus prevention, etc. They are available in water and oil types and are supplied in concentrated form. Complete technical information on these new stains and their application may be obtained by writing the company.

Letters from I. F. Readers

(Continued from page 8)

the name of the company interested in this, so we might correspond with them if this matter is still of interest to them.—PARKER RUST-PROOF CO.

Crack Filler Putty

We have a considerable amount of wood that we must use, and it is badly checked. We would appreciate your forwarding us the names and addresses of manufacturers of crack-filler putty. At the present time it is slowing our production quite noticeably. We hope that someone manufactures a material that will solve our problem.—G. W. Co.

Information supplied.—ED.

Painting Nails

We desire equipment for continuous painting of nails. Are there any of your advertisers who produce such equipment?—W. C. Co.

Yes, we are submitting names and addresses of a few concerns who may be able to supply what you want.—ED.

Copies of Articles Wanted

We would like to obtain tear sheets of the article, "Sealing Structural Parts of Aircraft," by G. C. Close, as published in Sept., 1943 issue, pages 54 to 58 inclusive.—C. F. P. Co.

We would greatly appreciate it if you would send us a copy of the article in your August 1943 issue on painting ammunition boxes, by C. J. Romary.—P. C. Co.

In the August 1943 issue of INDUSTRIAL FINISHING you published a very interesting article, "Painting Streamlined Gasoline Drop Tanks". We want to know who to write to in order to obtain more detailed information regarding this type of production.—C. P. WORKS.

How Can We Remove Blackout Paint?

We are faced with a problem of removing the blackout paint that was placed on the exterior of all our factory windows shortly after December 8, 1941. Additional applications to the first one have been made from time to time, as needed, so that some of the windows have had from two to four coats of paint. The types of glass painted are: rough wire glass, ribbed wire glass, ribbed glass and plain clear glass. An analysis of the paint used is as follows:

Pigment 32%

Carbon Black	20%
Magnesium Silicate	80%

Vehicle 68%

Varnish; China Wood Oil; Esther Gum	44%
Linseed Oil, bodied	7½%
Solvent Naphtha	48½%

On the clear glass, this paint can be scraped off clean quite easily; but on the other glass, we have tried every kind of a paint remover that we know of, or that the paint firms have been able to suggest, and have found nothing satisfactory. We have been able to remove this paint by sandblasting, but we are not properly equipped to do this and it is doubtful that we can obtain the equipment needed. Also, we hesitate to start in on this method if there is any other means which can be used that would prove more economical or convenient.—R. B. C.

Since 1875

O'BRIEN

INDUSTRIAL FINISHES

Not the Most . . Just the Best

PIONEERING

ABOVE ALL other qualities, pioneers need **courage.**

When the flexibility of the internal combustion engine was applied to the problem of transportation under such able pioneers as Henry Ford and Elwood Haynes, the horse-drawn buggy gave way to a self-propelled vehicle which better serves the people of the world.

Along with pioneers in transportation came pioneers in food preservation. Wide demand arose for the unitized mechanical refrigerator, and cooking stoves followed quickly in the parade of beautification and efficiency.

Simultaneously with such pioneering, O'Brien's pioneered the modern type of house paint by using newly patented High Temperature Oils in conjunction with modernized coloring matter to create a combination which gave the outside of homes the same satisfying beauty of appearance and durability that had become the vogue for interior appointment.

Prior to this discovery, no great developments had been made in paints for domestic dwellings. The old, off-white dingy paints, with their early cracking and poor decorative effects, were accepted with no particular hope of improvement.

But with the introduction of O'Brien's Thermolyzed Oils, house paints were re-standardized to insure glossy texture, sparkling brilliance, greater durability and freedom from unsightly brush marks.

The rapid advance in sales volume of O'Brien's Thermolyzed Oil products testifies to their success as a pioneering accomplishment.

Pioneering requires more than courage alone. Other qualities are needed, such as sound leadership, experienced judgment, dogged perseverance and insatiable desire for success. The whole venture must, of course, be supported by sufficient financing to encourage success.

O'Brien's are embarked upon a present and postwar program of continued pioneering, of research to maintain their reputation for fine finishes, and of constant improvement of each product as new materials become available through the combined efforts of research in all contributing branches of science.

Contact O'Brien's when you seek the best paint products on the market.

O'BRIEN VARNISH CO.
South Bend 21, Indiana

Spiral Striping

We have a finishing problem upon which we would like to ask your aid. We would like to paint a spiral stripe on a ½-in. hardwood dowel 23-in. long. Can you suggest an apparatus which would accomplish this result?—F. Co.

Apparatus for applying a spiral stripe would have to be designed and built especially for the job. Or, you might be able to rig up something from certain used equipment, or parts. None of the manufacturers of striping tools seems to have had any experience on this.

If you have only a narrow stripe to make (say less than ¼-in.) and if you are not too particular about the stripes on different dowels being exactly the same pitch (like machine cut threads on bolts) it is possible that a careful skillful workman could take a small hand striping tool and lay on the stripe as the dowel slowly rotates between lathe centers (or between any two centers one of which is slowly turned by hand or power). The workman would simply start his striping tool at one end and move along steadily and at as nearly uniform speed as possible toward the other end. He could soon acquire skill and reasonable precision at this. A striping brush wouldn't hold enough paint to carry through, so it would be practically necessary that you use a fountain striping tool which has a small roller that rolls the stripe onto the surface being striped.

If a spiral of uniformly accurate pitch is desired, some means would have to be devised for controlling the rate of transverse travel of the striping tool or tool rest, while the part being striped rotates. Perhaps it could be done on a small screw-cutting lathe, if available.

Questions and Answers

Another idea is to make several masks (perhaps of soft sheet copper or any metal that will retain its shape when bent), slip the masks over several dowels, hang them up and carefully spray them at low pressure. The paint would have to be allowed to dry before the masks could be removed—and even then you might have some trouble slipping the striped dowels out of the spiral masks without damaging the stripe at some point. A spiral mask made of plastic or metal, would be more successful and less troublesome on shorter work of larger diameter than the long slender dowels you specify.

You could also mask the dowels with removable masking tape, spray them and then remove the tape.—S. X.

Dipping Machine Wanted

We would like to purchase a modern dipping machine suitable for dipping wooden handles. We shall appreciate it very much if you will kindly furnish us with the names of companies that have machines of this type.—W. M. Co.

About the only way to get a dipping machine today is to find

The Gem of Lacquer Finishes

America's finest

Padding lacquer

QUALASOLE

Gives fine furniture——that needed extra protection. Free book—

"The Finish of Your Lacquer Problem"

QUALATONE PRODUCTS, INC.

21 GAY STREET NEW YORK 14, N. Y.

and buy a used one or have one custom built, or build your own. At the present time we know of no concern that can supply what might be termed a standard dipping machine.

Concerns that design, furnish and install conveyorized dip-coating and drying systems supply everything required, of course, but we take it that you are interested in a machine that receives removable racks of many small parts, gently submerges them into a tank of coating material and then slowly withdraws them vertically. A machine of this description was formerly made in Grand Rapids, Mich., but the establishment has changed management and the present owners advise us that no more such machines will be made until after the war.

Incidentally, we receive many inquiries for dipping machines. Perhaps here is an opportunity for some individual or concern.—ED.

Measuring Amount of Materials Used

We do not remember of ever seeing anything in your magazine suggesting the best method for accurately testing the consumption of finishing material on a diversified line. It seems to us that such information might be useful.... Perhaps you have in your files some answers to the questions which are confronting us:

1) What is the best method for figuring consumption of finishing material? By weight or my measure?

2) As our runs are small and have a great diversity of patterns, we cannot make many tests, but we find that the tests vary on the same patterns. How many tests would you think would be necessary to arrive at an accurate average?

3) Do you know if there are any standards for barrel shrinkage, sloppage and adherence to containers and spray hose, etc.?

4) Do you know of any flow meter that will work out to show the number of gallons or whatever measurement is used, flowing through the hose? Upon inquiry, we were told that you could not work a flow meter because of the intermittent action of a spray booth.

We think that if you would conduct a research on this matter, it might prove to be of considerable value to your readers.—K. Mfg. Co.

My experience has been that the most practical method for accurately testing the consumption of finishing materials is by measure. Our method is to draw five gallons from the drum and put this into a pressure tank; or you can transfer this amount with a fluid pump. Then take enough pieces of one type or pattern of goods to be sprayed; spray this five gallons of material, and count the pieces coated. If enough pieces of the same pattern are not available, one gallon can be used. If flat surfaces are sprayed, such as dressers, table tops, etc., the amount of surface covered can be obtained by measuring the number of square feet or inches in the piece coated. Then see how much one gallon or five gallons will cover.

It may be necessary to run two or three tests with the same material—and with different air pressure and fluid tips. If a different operator sprays the goods for each test, there will be a slight variation in the results. After determining the number of square inches or square feet covered per gallon,

Standard Scores Again!

RINKOLIN First Linseed Wrinkle

Ho-w

a new wrinkle finish

(A COMPANION TO RINKOLIN)

AVAILABLE ON LOWER PREFERENCE RATING

When tung and oiticica oil vanished Standard Varnish promptly brought out RINKOLIN, a better wrinkle finish made with linseed oil. Now, with the supply of phthalic anhydride very limited we announce a companion product made without alkyd resins; therefore, enjoying more lenient end use. The uniform dull texture is independent of baking schedules, including short infra-red bakes.

FOOLPROOF BAKE

HIGHER MILEAGE

SINCE 1870

STANDARD VARNISH WORKS

2600 Richmond Terrace
Staten Island, New York

2600 Federal Street
Chicago, Illinois

the number of square inches of surface to be covered on the various pieces can be figured. You can arrive at the average coverage and cost of coating each piece.

In the case of fillers, it is necessary to weigh the amount of filler that is used in each gallon of thinner. Then count the number of pieces coated with each gallon of the liquid filler.

There is a flow meter that measures from ¼-pint up, that can be connected to the fluid line. It measures accurately. Perhaps this would be more suited for small runs or diversified lines. The same methods as mentioned above can be used to figure coverage, except that you use the meter instead of exactly five gallons or one gallon of material.

Due to the different formulation, different viscosity and drying time of different materials, etc., I do not know of any standards for barrel shrinkage or for adherence of material to barrels and spray hose.

Materials that are sprayed when they are below room temperature will be more viscous and will not give as good coverage — and, of course, more of the material will adhere to the barrel. But most materials are never sprayed while too cold, so in running a test be sure that materials are of the proper temperature.

Care should be observed in making the test measurement so as to be sure that the same thickness of film or coat will be used in regular production. Have the operator spray and use as nearly as possible the same methods that he will use in regular production.

These methods can be used for measuring practically any type of finishing materials and, if properly measured, an accurate estimate can be obtained.—H. W. CHESTER.

Hot Lacquer?

Can you give us the names and addresses of firms offering equipment for the application of cellulose and similar lacquers "hot"? Any information you can give us will be welcome.

Do you know if this process is likely to be of any importance in the United States after the war? Or do you think manufacturers will adopt other methods of wood finishing?—R. C., Ltd. (England).

We are sending you lists of manufacturers of equipment for spraying lacquer hot; also concerns who supply lacquers formulated to be sprayed hot.

As to the importance of hot lacquer after the war, we hesitate to hazard any forecast on this. You

Perfection in—

WRINKLE FINISH!

FREE FROM CHINA WOOD OIL

To conform with the Government regulation prohibiting the use of china wood oil, and to maintain the splendid reputation of Yarnall Wrinkle Finish—the Yarnall laboratories, after extensive research and field tests developed a new Wrinkle—one whose qualities stand up to every test—and during the past year has been used by some of the largest wrinkle finish users.

IF YOU WANT—

SURFACE PROTECTION
RESISTANCE TO THE ELEMENTS
FREEDOM FROM GLARE
EYE APPEAL
COVER SURFACE IMPERFECTIONS
COMPLETE SATISFACTION

USE THE NEW—

YARNALL WRINKLE FINISH

Write for complete information

YARNALL PAINT CO.

Industrial Division

PHILADELPHIA . . . . PENNSYLVANIA

might be interested in the following excerpts from a letter by Charles D. Goodale, Manager Technical Service Div. for Commercial Solvents Corp:

"Our chemists have developed and patented a process for hot lacquer which allows the application of much thicker coats than can be obtained normally without sacrificing any of the desirable characteristics of lacquer. The process allows very substantial savings in labor and material in the case of applications for which it is suited.

"Specially formulated lacquers must be used for hot spraying, therefore we suggest that you take up this matter with your lacquer supplier. If he is not familiar with the development, we will be glad to work with him on the preparation of a lacquer suitable for your requirements."

Painting Wooden Toys

We are interested in procuring all the information possible on efficient methods and processes for the production finishing of high grade wooden toys. The toys referred to are made up of a considerable number of small parts, and for obvious reasons, economical handling methods are of prime importance.—B. W. Co.

For best results, it is our suggestion that your work be analyzed by a competent engineer who can then prescribe different methods of doing it, depending upon your volume of production and what investment you care to make in equipment.

On production painting or finishing today, the general trend is to conveyorize the entire set-up whenever possible. Often small parts are hung on racks or hooks suspended from an overhead chain conveyor (or parallel chains with crossbars between) and, as the conveyor moves along the parts or products are spray painted or, by a dip in the conveyor, they are submerged in a tank of paint, withdrawn and moved along over a drainboard and perhaps through a force-drying tunnel.

If the parts are dipped, there are several different ways to remove the clinging paint beads which hang on the low corners or edges of dipped work after it has hung long enough for all other excess paint to flow off. In a few cases they are removed by having someone stationed along the conveyor with a small paint brush. Another way of doing it is by the use of electrostatic detearing equipment, which has been publicized in recent issues of this magazine.

Some small parts (before assembly) can probably be coated by tumbling or whirl finishing. Really, it will require an experienced and competent man on the job to analyze each part and then advise you about possible economical methods of doing the work.—ED.

Handling Women Workers

Two reports relating to women workers in industry have been issued by the Policyholders Service Bureau of the Metropolitan Life Insurance Co., 1 Madison Ave., New York 10, N. Y. The titles are, "Recruiting Women Workers," and "The Employee Counselor in Industry." Copies are free on request.

Flexible Shafting Booklet

A new brochure on flexible shafting for remote controls contains valuable information and full-size reproductions of various styles of flexible shafts and end fittings for adaptation to hundreds of remote control applications. A copy of this booklet, No. 273, can be obtained by writing to Mall Tool Co., Flexible Shaft Division, 7740 S. Chicago Ave., Chicago 19, Ill.

QUICK DRYING

NITROCELLULOSE LACQUER means high speed finishing of industrial products. It dries quickly into a hard, durable coating. With lacquer you can spray and ship without delay. No long waiting for finish to harden . . . no special drying equipment needed. For speed and economy, use Nitrocellulose Lacquer.

Nitrocellulose Lacquer—the post-war finish on today's war-products.

CSC makes no lacquers or thinners but supplies solvents and plasticizers to manufacturers of protective coatings.

CSC

COMMERCIAL SOLVENTS
Corporation

17 East 42nd Street, New York 17, N. Y.

Booklets Catalogs Circulars

Grinding Wheel Booklet

Experts have compiled questions and authoritative answers into a 32-page booklet covering the most pertinent facts of diamond-impregnated grinding wheels, recommended uses, economical operation, proper maintenance, etc. This booklet is available to plant executives and production men without charge. Write to Plant Service Department, Larco Tools, 551 Fifth Ave., New York 17, N. Y.

Color in Healing Art

General Printing Ink Corp., 100 Sixth Ave., New York 13, N. Y., has issued an unusual and interesting booklet on the medical aspects of color. It is known that for a good many centuries men have related color to the science and art of healing. However, there are enigmas about color and the human body which still have to be answered before anyone may definitely accept or definitely reject color as a curative.

If you would like to know more about this intriguing subject, write to the Advertising Department of General Printing Ink Corp. and request a copy of Let Me See Your Tongue.

New Booklet on Common Hazardous Chemicals

The National Fire Protection Association announces publication of a new and revised 7th edition of its "Table of Common Hazardous Chemicals." This table has been developed by the N. F. P. A. Committee on Hazardous Chemicals and Explosives, in cooperation with the American Chemical Society. It represents the most authoritative information available to date. The 1944 revision includes data on a number of chemicals not previously in general commercial use, which are now widely used in war industry.

Included in the table are data on 98 hazardous chemicals with respect to their fire hazard, life hazard, recommended storage, and proper methods of fire fighting, with recommendations as to suitable extinguishing agents for fires in chemicals which cannot be fought with water by ordinary methods because of chemical reaction with water. The "flash point," "explosive range" and "ignition temperatures" are given for those chemicals where such information is essential.

Copies of this 32-page booklet may be obtained from the National Fire Protection Associatoin, 60 Batterymarch St., Boston 10, Mass., at the nominal price of 30 cents a copy.

Washing, Spraying, Drying Catalog Free

A colorful illustrated catalog containing 96 8½x11-in. pages is now ready for distribution by the Newcomb-Detroit Co., 5741 Russell St., Detroit 11, Mich. Contents include paint spray booths, metal-parts washers, drying ovens, rust-proofing systems, ventilating systems and other sheet-metal equipment.

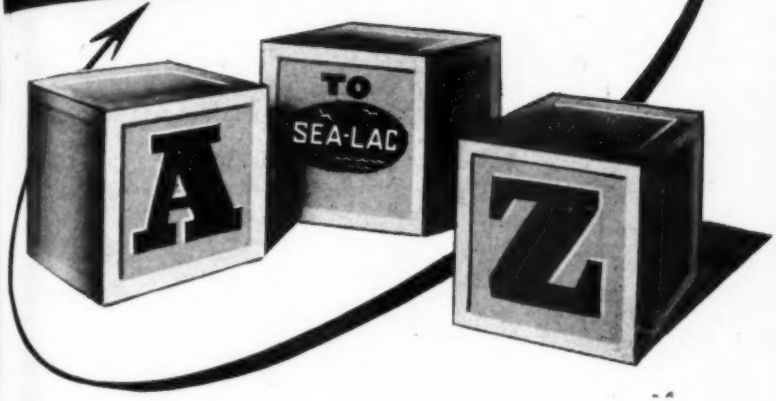
The catalog is fully illustrated, including cutaway drawings of equipment mechanism and size and capacity charts. The book also has a 36-page Engineering Data section which contains useful information for engineers working with sheet metal. A catalog will be sent to anyone requesting a copy on his company letterhead.

Check Chart for Postwar Products Offered Free

A simple but comprehensive "New Products Check Chart," developed by Designers for Industry, Inc., is attracting nation-wide interest. This "Check Chart," developed around a list of 46 questions, provides a systematic plan whereby a manufacturer can quickly and soundly appraise a product that he believes might be desirable for his company to make. This chart also serves as an outline for a deliberate and detailed study of all the principal factors involved.

Representing the many years' experience in product design and development of Designers for Industry, Inc. —an organization consisting of over 100 engineers and specialists — this check chart is available to any manufacturer who is considering new products for postwar manufacturer. A copy may be obtained without charge by writing to Designers for Industry, Inc., 2915 Detroit Ave., Cleveland 13, Ohio.

A SEA-LAC FINISH
FOR EVERY NEED



Adhesives, Synthetic
Cold Set or Heat Sealing
for Fabric, Cellophane, Paper, Metal and Plastic

Aircraft Finishes
Primers
Dopes
Synthetic and Nitrocellulose Enamels

Finishes for Metals and Plastics
Outstanding toughness and durability
High Soap and Heat Resistance
Salt Spray and Solvent Resistance
Low Moisture Permeability

Strip Coatings for Masking
Solvent or Waterproof

Surfacers
Good flow, good hiding, no sanding

Water Dip Lacquers

Wrinkles
Latest types, all colors

Zinc Chromate and Other Primers
For Aluminum Alloys, Steel, Cadmium and other metals

All excellent finishes. In each group there are a few specials that have demonstrated durability under adverse conditions.

We haven't begun to list them all. Many are in war service. Certain "Sea-Lac" finishes are now being produced exclusively for wartime uses. Others are subject to emergency restrictions. Even so, submit your finishing problem to us. Likely, we have the very finish you're seeking, regardless of surface. If not, we'll work it out for you—without obligation.

DURALAC CHEMICAL CORPORATION
LISTER AVENUE, NEWARK 5, N. J.

Make a Note of This...

Call on Walker Laboratories for information as they have done considerable research and development work on new finishes for both war work and civilian production.

That should interest YOU

BECAUSE this broad background of experience has developed the best in finishes from which to supply the needs of industry for application on metal, wood, plastics or any other material that may be in use.

Walker Laboratories have the answer to your present or future finishing problems. Walker's complete line of modern production finishes includes primers, surfacers, lacquers, wrinkles, synthetics and special coatings for special purposes. Walker has what you want or will make it.

"Call on Walker"

H. V. WALKER CO.

Elizabeth, New Jersey

MODERN PRODUCTION FINISHES

MR. STIX

The Seven Famous Brands of
BURNING - IN - STIX

A Burning-in-Stix for every purpose, manufactured in 164 standard colors, plus 100 special formulae to meet the needs of manufacturers and others requiring special shades and colors. Any sample panel matched. These stix are made of finest materials and color-stains available. Color-stains are perfectly blended into pure gums, leaving no air bubbles or color specks. Size of stix larger than most. Do not hesitate to try these stix and take advantage of our matching service.

Send in for Free Samples.

Years of research and thousands of dollars have been invested in bringing these seven famous brands of Burning-In-Stix to their present stage of perfection. The brands include:

Special **Lucstix** is made of the finest materials, and will not lift or shrink in or under lacquer. Is free of color specks. Made of special resins that withstand the fast solvenizing action of high powered solvents used in modern synthetic and lacquer finishes. Helps finisher repair surface in one operation.

Special **Shelstix** is made from the choicest shellac gums and resins, and will be found far superior to many brands of shellac sticks. If you haven't tried this Finishine SHELSTIX, you will be wise to put in an order right away, to make certain that your repair work will be of the highest grade.

Special **Porcelstix** is the item you can depend upon to repair chipped porcelain, marble or tile. Does it within ten minutes. Easy to use and comes in assortment of fourteen permanent colors. Porcelstix is made from a unique combination of special resins that puts it in the high quality class. Is waterproof and will stand tremendous amount of heat.

Special **Synstix** is made of special resins that will withstand the fast solvenizing action of high powered solvents used in modern synthetic finishes. Will not lift or shrink under synthetics. A big stride in the stix field.

Approx. size Porcelstix, 3½ x ¾ x ⅜; balance of brands 7½x⅜x⅜ packed 12 all one color, or assorted to package; or, Kit Box assortments of all brands except Porcelstix, packed 144 colors of 2⅜ length.

Special **Varstix** is made especially for varnish finishes. Will not lift or shrink under varnish. Made of exceptionally fine materials so as to coordinate with the latest types of varnishes requiring strong reducers. Will perform a high grade repair job on high grade finishes.

Special **Enamelstix** is a boon to the finisher for repairs on enamel finished wood furniture. May be used in and under any type of enamels on wood. Will not lift or shrink under this type finish. Made of finest materials available. If you handle enameled wood furniture you can not afford to be without this item.

Special **Cementstix** is made of more pure gum and colors than the average wood cement. Many customers using CEMENTSTIX with entire satisfaction. Your finishing repair stock is not complete without this item.

Send in for free samples!

FINISHINE LABORATORIES, INC.
SYRACUSE 4, NEW YORK

Our Slogan: "Thousands for Research—Without One Cent of Regret"

Industrial FINISHING

Distributed monthly to finishing room and paint shop foremen, production superintendents and company officials of metal-working, woodworking and miscellaneous industrial plants where production cleaning and finishing are major operations in parts and products manufacture.

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Editorial

Random Comment on the Industrial Scene

BY LAWRENCE H. SINGER

Answering Correspondents—The article entitled: "Looking Ahead," prepared by Dr. Maximilian Toch and this writer, which appeared in the January issue of INDUSTRIAL FINISHING, has brought numerous inquiries from this country and abroad. Several readers were particularly curious about the reported development of a hot, solventless resinoid finish.

Dr. Moore, of the Bakelite Corp., has advised Dr. Toch that nothing can be done about this invention for the duration of the war, as the requisite materials are not available, and it is impossible at present to make the heat-retaining atomizers.

This significant development which may have an important bearing on the progress of industrial finishing methods in the years ahead, will therefore have to be held in abeyance until victory has been won.

• • •

Peacetime Markets—Qualified experts are outdoing one another in their rosy forecasts of the prospective sales volume for postwar consumers' goods. Lieut. Gen. Wm. S. Knudsen, Army production chief and former president of General Motors Corp., said a few weeks ago that America will want 12,000,000 autos after the war—representing 2½ years of capacity production.

On the same theme, Wm. E. Holler, sales manager of Chevrolet Motors, has stated that if auto manufacturing is resumed in 1945, it will be at least July 1949 before the U. S. car population approaches the 1941 total.

In the field of household appliances, a survey by Westinghouse has been released in a similarly optimistic vein. Based on estimates supplied by over 100 of its distributors, the company believes its sales of household electrical appliances will average 78% higher than the peak years of 1940-41, during the five years following the end of the war. This study in-

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

ALWAYS READY FOR TOUGH WORK...

KELLOGG-CROWN "250"

Here's a spray gun that feels right—and *is* right; and it's built to take it. Easily-accessible, easily-operated precision controls—non-tiring, free-swinging balance. For better, more profitable finishing, look into the Kellogg-Crown line of paint spray equipment. For *the most air per dollar*, your choice will swing to a Kellogg-American air compressor—built for hard work, long life, low operating cost.

Kellogg-American

AMERICAN Brake Shoe COMPANY

Kellogg Division, Rochester 9, New York

AIR COMPRESSORS • PAINT SPRAY EQUIPMENT • CAR LIFTS • CAR WASHERS

cluded refrigerators, ranges, washing machines, and other items.

* * *

Bargains For Uncle Sam—Nine billion dollars have been saved thus far on war materials, as a result of manufacturing economies in our industrial plants. That pleasant news was released not long ago by Brig. Gen. Al. J. Browning of the Army Service Forces.

B-24 bombers cost $238,000 each two years ago, and now cost only $137,000. The price of a light tank has been cut almost exactly in half. A Garand rifle's sales ticket is about 40% of the 1942 figure. Business can take deep pride in these eloquent statistics.

* * *

No Oil Shortage—This department has recently enjoyed the pleasure of additional correspondence with Dr. Gustav Egloff, research director of the Universal Oil Products Co., and the world's leading petroleum technologist.

Dr. Egloff, who is president of the American Institute of Chemists, scoffs at the constant warnings of an impending oil famine. "We've had these predictions of exhaustion of our petroleum supplies for 85 years," he says. "They began two years after the drilling of the Drake well." The renowned scientist maintains that we have merely tapped this country's reserves.

* * *

Tomorrow's Kitchen—The Libbey-Owens-Ford Glass Co. was kind enough to arrange, for this observer, a private inspection of its sensational new Kitchen of Tomorrow. The first week's showing of this display attracted 50,000 visitors in New York recently.

Dozens of startling innovations are included in the exhibit. The oven has front and side glass panels. The sink has an automatic garbage disposal unit, and a thermostat which produces exactly the degree of heat desired in the water. The most radical departure of all is contained in the refrigerator; it is low, flat-topped, and oblong, with five separate compartments.

The big Toledo concern is emphatic in pointing out that none of the equipment on view is being manufactured at the present time. The show is designed as evidence of thoughtful postwar planning, and for the purpose of gauging the response of U. S. housewives.

* * *

Travel For All—Edward G. Budd, pioneer builder of lightweight railroad equipment, has been urging sharp slashes in the cost of postwar railroad travel. It should be possible, he contends, to cross the continent in a swift, de luxe train, with all meals included, for $70.

* * *

Portable Secretary—An electronic recording device, developed by the SoundScriber Corp. of New Haven, Conn., is being adopted for a wide variety of interesting applications.

With this portable equipment, weighing only 25-lbs. in its carrying case, a business executive can record dictation, group conferences and interviews on a featherweight, indestructible plastic disc. The platter can then be mailed at regular first-class postage rates to his home office, where it is quickly transcribed.

The SoundScriber is being used for on-the-spot radio recordings, in courtroom trials, to retain permanent records of important factory conferences, and in scientific research. The discs are made of Vinylite plastic, and the apparatus can be handled as easily as a radio.

(Continued on page 102)

Coat the bottom of Smoker Sets with

Cellusuede FLOCK

Just one of many ways in which Cellusuede Flock may be used to give a product a smooth non-scratching base and a quality finish that enhances its value.

Rayon and Cotton Flocks are supplied in one-pound bags, twelve to a case, solid or assorted colors. Also supplied in 10- and 50-pound bags. Wide variety of colors.

Cellusuede Flock is easily applied to wood, metal, glass, paper or cloth with a spray gun or by sifting. A material of many uses.

Write for color card, samples and prices.

CP *Cellusuede Products, Inc.*
ROCKFORD, ILLINOIS

Cause For Hope—In the midst of many disquieting reports, it was refreshing to read about the recent Atlantic City conference on postwar policies, with representatives of leading business, labor and agriculture groups attending.

C. F. Hughes, business editor of the New York Times, commented pungently on the successful gathering. "These sessions," he said, "demonstrated again that the man you don't know is a Red or a Fascist, but across the table he is a likeable chap who may have some good reasons for believing the way he does after all."

The most hopeful aspect of the meeting was the determination of the 16 cooperating groups to meet regularly, from now on, at 2-month intervals.

* * *

New Radio Market—A great new field for radio development was cited by Charles I. Stanton, Administrator of Civil Aeronautics, in a recent address before the Institute of Radio Engineers. Pointing out that we may have 500,000 civilian airplanes in the United States in the postwar decade, Mr. Stanton added that most would be privately owned, and would require radio equipment.

The radio compass will probably be standard factory equipment, he contended, except on the lowest-priced planes and on trainers. One company is prepared to produce the receiver alone for less than $30, and a transmitter should not cost more than $50 on a mass-production basis, according to the administrator.

* * *

Paint Detectives—Foster D. Snell's "Chemical Digest" reports on the value of paint chippings in helping the F.B.I. track down important crimes. A tiny fragment of the paint, chipped from a vehicle at the scene of a crime, is often sufficient.

We learn that the year, make and model of the car involved are frequently determined after the paint has been subjected to microscopic, chemical and spectroscopic analysis.

* * *

Exit Women Workers?—The Bureau of the Census reports that there were almost 17,000,000 women workers in industry in January, an increase of 6,000,000 since 1940. Many observers calmly assume that the vast majority of this group will gladly leave the ranks of labor when peace comes, but this glib assumption is not borne out by the facts.

The Northwestern National Life Insurance Co. has completed a careful survey covering most of the United States. The analysis shows that 71% of the feminine workers expect to continue on their jobs after the war.

In the meantime, however, manpower demands will draw many additional thousands of women into our war factories during the remainder of this year.

* * *

Strange Pastures—In the opinion of Paul W. Litchfield, Chairman of the Board of Goodyear Tire and Rubber Co., a great deal of our industrial postwar planning thus far has been disappointingly sterile. He cites the imaginary example of a prewar manufacturer of washing machines, who intends to resume production, but also plans branching out into the field of radios.

"He will be adding little or nothing to the cause of a broadly expanding economy," says Mr. Litchfield. "His contribution would be infinitely more valuable if he were

RUDD
LACQUER CORPORATION

SPEEDROY · RUDLACO · NOROY

UNIFORMITY · QUALITY · PERFORMANCE

127 MAIDEN LANE
NEW YORK, N.Y.
FACTORY - RAHWAY, N.J.

CATALINA RESCUES FIFTEEN

AIRPLANES
GUN STOCKS
BOMB SIGHT BOXES
TOOL CHESTS
MARINE PARTITIONS
RADIO INDUSTRY, ETC.
SKIS
INSTRUMENT BOXES

LT. NATHAN GORDON, U.S.N., Pilot of a PBY-5A Catalina Bomber, recently rescued fifteen American airmen floating in Kavieng Harbor, New Ireland. He landed his cumbersome Catalina flying boat in the harbor four times under heavy shellfire from Jap shore batteries. He succeeded in picking up the fifteen airmen who had been shot down during a particularly vicious dogfight with the Nips.

Our Navy Catalina pilots are doing a magnificent job in the Southwest Pacific. They range far and wide, day and night, principally for reconnaissance and spotting. Their night bombing of Jap ships has been a bright page in their amazing record of achievements.

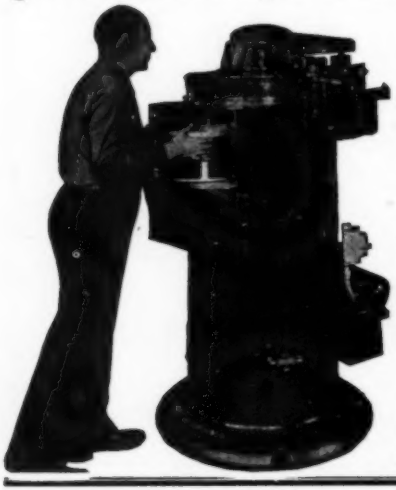
Listed here are a few of the war products now being coated with our materials. Phone, wire or write and let one of our finishing experts help you "keep production rolling."

BACK THE ATTACK . . . . . BUY WAR BONDS

The Lawrence-McFadden Co.

Headquarters for Fine Finishes Since 1875
7430 STATE ROAD PHILADELPHIA, PA.

Speeds Production for Coating WAR PRODUCTS



500 Large Cartridge Clips Coated Per Minute
1000 1" Buckles Coated Per Minute with R-200

"SPEEDIP" Whirl Enameler and Coating Machine

A combination dipping-whirling machine for completely coating large quantities of small parts with lacquer, enamel, paint, oil, wax, etc. ● All operations are within the machine. Parts are dipped into coating material, raised and whirled. Time—as little as 30 seconds. Speeds up production—cuts finishing costs—saves up to 90% of coating materials.

WRITE FOR FURTHER DETAILS OR SEND SAMPLES TO BE COATED.

RONCI MACHINE CO.
2 Atlantic Blvd., Centredale 11, R. I.

Decorative Coating . . .

that attracts real attention is obtained by using the best quality of

Cotton, Wool or Rayon Flocks

The best made are by CLAREMONT. That's all you need to know.

For samples, prices and general information come to

CLAREMONT WASTE MFG. CO.

CLAREMONT, N. H.

The country's largest manufacturers of Flocks

to concentrate on an improved and less expensive washing machine."

* * *

Furniture Prospects — Furniture men who expect the present steady "sellers' market" to carry over into the postwar years were recently given a sharp warning by Raymond Reed, advertising manager of Heywood Wakefield, Inc. Profits may be sharply reduced when production restrictions are lifted, and supplies once more catch up with demand.

"Do you realize," he added, while addressing a trade gathering in Manhattan, "how fast we can move from scarcity to saturation when the fantastic war production of today is applied without brakes to civilian productoin?"

* * *

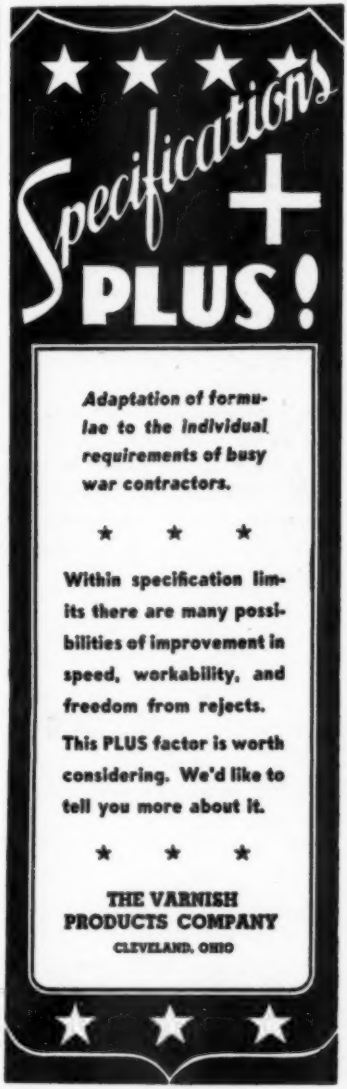
For Visitors — Leading sponsors are continuing to cooperate with this department in the distribution of free radio broadcast tickets to readers of INDUSTRIAL FINISHING. When planning to visit New York, drop a line to:

Lawrence H. Singer
130 West 86 Street
New York 24, N. Y.

These new shows are also commended to your attention: "Mexican Hayride," a lush music extravaganza with Bobby Clark and June Havoc; and "The Cherry Orchard," a beautiful revival starring Eva Le Gallienne and Joe Schildkraut.

I.C.D. Formula 9 Changes Address

The Industrial Chemical Development Corp., manufacturers of the well-known paint remover called I.C.D. Formula 9, announce that the new address of their New York office on and after May 1st will be 347 Madison Avenue, New York. Their factory address will remain the same, which is Newark, N. J.


Specifications + PLUS!
Adaptation of formulae to the individual requirements of busy war contractors.
Within specification limits there are many possibilities of improvement in speed, workability, and freedom from rejects.
This PLUS factor is worth considering. We'd like to tell you more about it.
THE VARNISH PRODUCTS COMPANY
CLEVELAND, OHIO

SAFEGUARD YOUR SPRAY BOOTHS

Apply Wyandotte Spray Booth Coating *first* for quicker removal later of layers of inflammable paint. It takes only a thin coating to make cleaning easier, speedier, more economical. Write Wyandotte Chemicals Corporation, J. B. Ford Division, Wyandotte, Michigan, for full details!

Wyandotte F-100 will help cut your floor-cleaning costs. Even heavy soil disappears when this remarkable compound gets to work!

FINISH BAKING OVENS

- **ALL TYPES,** standard or engineered to suit your needs.
- **ALL SIZES** from smallest test units to large conveyors.
- **ALL FUELS** are adapted to Despatch ovens. Unique system assures fast, even baking and low operating cost.

Write for Details Today

DESPATCH
OVEN COMPANY MINNEAPOLIS

Appraisal of Postwar Markets for Products

A business appraisal of postwar markets to a degree of detail never before attempted has been organized by the Committee for Economic Development* with the cooperation of 581 leading trade associations in manufacturing fields.

The appraisal, now in its initial stages, will embrace 400 to 600 categories and sub-categories of commodities, as compared with the 62 finished goods classifications for which postwar estimates were made by the U. S. Department of Commerce in a publication entitled, "Markets After the War." The C. E. D. study will carry on, in behalf of private business, from the Department's study, in order to bring together the most realistic estimates obtainable of the level of sales, production and employment in all the major classifications of industry, projected into the first full peacetime year after the war . . . . assumed to be 1947.

The estimates being requested by C. E. D. under the direction of Ferdinand C. Wheeler, New York marketing analyst, will not be mere mathematical projections but will represent the "collective business judgment of informed executives derived from an orderly and purposeful study of the industry with which each of them is most familiar." As a result, it is hoped to obtain an over-all estimate of our national economy, so that each industry and each company may be able to form some idea of its relations to the economic

*The Committee for Economic Development, 285 Madison Ave., New York 17, N. Y., is an independent, non-governmental organization of businessmen supported by voluntary contributions of limited size from business firms and corporations.

90 MINUTE DRYING TIME REDUCED TO 10 MINUTES

Oven Length Reduced 58.8%

Get the Facts!

This "Infra-Red" Principle applies with equal efficiency to food baking, roasting and cooking; metal melting and annealing and an unlimited range of heat applications.

BURDETT
(The Original)
"INFRA-RED"
GAS BURNER

21 NORTH LOOMIS ST., CHICAGO 7, ILL.

BURDETT MANUFACTURING CO.
Infra-Red Gas Burners

"The answer to numerous industrial problems is found in

FLOCK!

Rayco Flock is textile fibres cut to extremely short uniform lengths, applied by adhesive to form a solid, even coating. Available in various lengths, styles and colors.

FUNCTIONAL

Used in Airplane, auto and numerous other industries for—
SOUND DEADENING — TEMPERATURE INSULATION — INTEGRAL GASKETS SHOCK - ABSORBING SURFACE— NON-MAR SURFACE PROTECTION.

DECORATIVE

Applied in various lengths and colors to wood, paper, cloth, metal, etc., the following effects are produced—
SUEDE LEATHER — FURNITURE UPHOLSTERY FABRICS — AIRPLANE AND AUTO UPHOLSTERY FABRICS—VELVET —VELOUR—MOHAIR

Request Samples and Prices

RAYON PROCESSING CO. of R. I. INC. 55 TREMONT STREET CENTRAL FALLS, R. I.

Industrial Designers

DYNAMIC
BOW INSTRUMENT

COMPLETE LINE OF
DRAWING
INSTRUMENTS

SCHRELL & BROCK
Drawing Materials
NEW YORK N.Y.

scheme as a whole, and of the prospective postwar production in other industries which affect it.

The Marketing Division of C. E. D. is asking industry to do its own estimating of its postwar markets. If a total picture can be developed it will be a synthesis of what men in all the industries think, soundly based on a grasp of conditions as to new developments and plans and situations peculiar to their several lines.

Since some trade associations and private companies may not be familiar with forecasting methods, C. E. D. has prepared a series of six data sheets, representing the steps necessary to arrive at the desired estimates.

Technological Progress in Production Paints

★ It is interesting to consider the changes that have taken place in the manufacture and formulation of finishes in the last 20 years. In this relatively short period, we might say that paints have entered the "synthetic era." Earth pigments and the early manufactured colors have been supplemented by a wide variety of chemically manufactured pigments. In addition to natural resins, the chemist and formulator now have at hand a multitude of synthetically manufactured resins to assist in the development of effective finishes for most purposes.

To the few natural oils available a generation ago, we have such

---

★ Guest Editorial . . . Many readers can write an excellent editorial — two or three paragraphs that present a timely suggestion or valuable idea which will stimulate real thought on a live subject. The Editor welcomes guest editorials and pays for those that are published.

Drafting departments

Precision grading in all degrees

SCHRELL & BROCK
Drawing Materials
NEW YORK N.Y.

chemical newcomers as dehydrated castor oil, fatty acid esters of alcohols other than glycerine, conjugated oils, isomerized oils, segregated oils, and chemically treated oils of many kinds, as well as new useful members of the vegetable oil family.

In this "synthetic era," turpentine and mineral spirits have been replaced, in many instances, by petroleum naphthas of all descriptions, by the aromatics like toluol any xylol, by newer terpene solvents and by chemically made materials almost without end.

Paint manufacturing procedures have progressed too, and more developments in this direction may be expected in the future. A well-organized paint manufacturer's laboratory today is no longer a dark corner in the plant where one or two "screwball" chemists are allowed to putter to the accompaniment of belittling remarks from the old-time paint makers. Management is to be commended for its far-sightedness in supporting large well-staffed and equipped laboratories for research, development, testing and control. Between them, these divisions test all incoming raw materials to see that they meet rigid standards of uniformity; and all outgoing products to make certain that shipments of finishing materials are of uniform color and quality.

Development and research divisions investigate the usefulness of new chemical products appearing on the American market. The consumer of paints is thus assured that his product will be finished with the newest and best that modern paint technology has to recommend. There is every indication that the future will bring still greater progress in the usefulness, manufacture and control of finishing materials. There is every expectation that research will play an ever-growing part in providing new synthetic materials for the superior finishes of the days to come.—M. A. GLASER.

FREE

Your copy of our new 144-page catalogue—"Chemicals by Glyco"—is full of information on products, processes and uses. Tables and suggested formulae may help solve your problems both for war and post-war needs. Send for your free copy today.

GLYCO PRODUCTS CO. Inc.
26 COURT ST., BROOKLYN 2, N. Y.

CHEMICALS BY GLYCO

INSULATED REFLECTIVE
SECTIONAL
MISKELLA
INFRA-RED
OVENS
We sell lamps too.
Infra-Red Engineers & Designers
MAIN OFFICE and LABORATORY
1633 EAST FORTIETH STREET
CLEVELAND, OHIO

Classified Advertising

Rate: 45 cents per line per insertion—minimum $1.35

LINES WANTED

By experienced paint salesman in Milwaukee territory. Fine record contacting industrial accounts. Strictly commission. If you are not represented here, write me. Address IF-984, care Industrial Finishing.

SALESMAN WANTED

TEXTILE COATINGS AND FURNITURE LACQUERS. Lacquer manufacturer with Eastern and Midwestern plants requires experienced salesman as representative to the Textile Coating and Furniture trades and other industrial users. Address IF-981, care Industrial Finishing.

PAINT SALESMAN

Industrial paint salesman wanted for New England territory by Eastern manufacturer of full line of synthetic enamels and lacquers. Present active accounts will be turned over to satisfactory man. Remuneration on a salary and expense basis. Please reply, stating age, draft status, education and experience. Our present salesmen are aware of this advertisement. Address IF-985, care Industrial Finishing.

INDUSTRIAL SALESMAN WANTED

For Iowa territory. Excellent opportunity. Advise age, past experience and draft status. Address IF-979, care Industrial Finishing.

WANTED

Industrial Finishing Salesman for Chicago territory, by out-of-town manufacturer. Advise age, past experience and draft status. Address IF-987, care Industrial Finishing.

PAINT SALESMAN WANTED

Experienced Maintenance or Railroad Paint Salesman to cover railroads in Chicago, Minneapolis, St. Louis and Omaha. We are one of the oldest and largest paint manufacturers in the country and will turn over substantial volume of established business to right man.

The job is permanent and affords good opportunity for good earnings.

In reply, please state age, married or single, number of dependents, and draft status, and your arnings during 1942 and 1943. All replies strictly confidential.

Address: DEVOE & RAYNOLDS CO., INC., 1481 S. 11th Street, Louisville 3, Ky.

PRODUCTION FOREMAN

Wanted for finishing department of furniture plant about to start on a line of high-grade toys with colored lacquer enamels. Excellent opportunity. Give age, experience, previous connections, salary expected to start, and how soon can start. Address IF-989, care Industrial Finishing.

LACQUER FOR SALE

Have furniture and toy lacquer surplus. Colors and clear. Also some lacquer thinner. All in drums. Address IF-980, care Industrial Finishing.

NON-PRIORITY LACQUER OFFERED

Non-Priority Lacquer and Sealer equal in all respects to a patented low viscosity product now being manufactured and being used by reputable furniture and novelty manufacturers. Available in Clear and Flat Lacquers and wide range of colors. Also can be manufactured to match users standard colors and sheens. Address IF-982, care Industrial Finishing.

OVERSTOCK

Of silk-screen lacquers in drums. Red, white, black, gray, yellow and reducer. Address IF-983, care Industrial Finishing.

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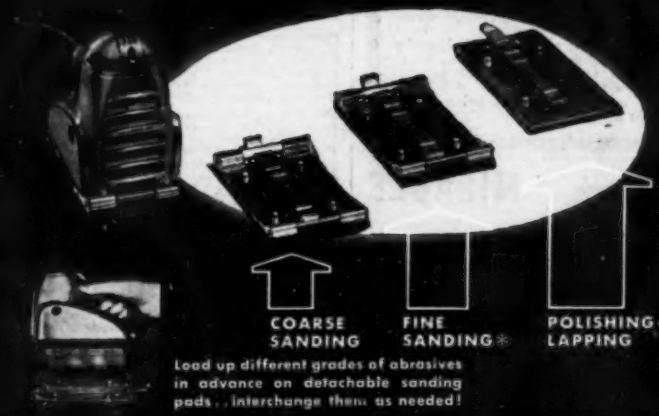

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